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MONTHLY REPORT

OF THE

DEPARTMENT OF AGRICULTURE

FOR

NOVEMBER AND DECEMBER, 1874.



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# MONTHLY REPORT.

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DEPARTMENT OF AGRICULTURE,  
*Statistical Division, December 16, 1874.*

SIR: I report herewith, for publication, the digest of returns of production of corn, cotton, tobacco, hay, and other crops in comparison with the quantities produced in 1873, with various extracts from correspondence, regular and special; also a communication relative to international statistics of agriculture from the Austrian minister of agriculture; a letter from the United States consul at Tampico upon the agriculture of Tuspan, in Mexico; a translation and condensation of reports of foreign co-operative farming; and the usual work of the departmental divisions, and minor facts mainly from official sources.

J. R. DODGE,  
*Statistician.*

HON. FREDK. WATTS,  
*Commissioner.*

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## DIGEST OF CROP RETURNS.

### CORN.

There has been an increase in area of corn the present season, but a decrease of aggregate product. The enlargement of breadth planted was confined to the Gulf coast and the region north of the Ohio and west of the Mississippi.

The early reports of condition were quite favorable in Pennsylvania and Maryland, South Carolina and Georgia, Texas, and in most of the Western States. Cold storms on the Northern Atlantic coast caused late planting and unthrifty appearance. Inundations, soaking rains, and consequent replantings gave an unpromising start to corn from Alabama to Arkansas. Cut-worms were quite injurious in the West. Chinch-bugs, after devastating wheat-fields, attacked corn vigorously in many localities; and not content with the abundance of this great American cereal, are reported in some instances as addicted to a potato-diet, and even to tobacco-chewing. As the season advanced, returns were less favorable. The night-temperature was too low, as far south as Pennsylvania, for the best growth. Drought reduced condition in Maryland and Virginia, in the Gulf States west of Georgia, and in the Mississippi and Ohio Valleys generally. West of the Mississippi, the crop encountered disasters of great severity from drought, drying winds, and chinch-bugs. In October, there appeared only a slight improvement in condition upon the previous months. The absence of injurious frosts up to the first of November was very favorable, and served to mitigate the severity of the anticipated reduction in yield and value. Kansas, Nebraska, and Missouri, in addition to the above-mentioned

causes of injury, were terribly afflicted with the scourge of grasshoppers.

The quality of corn is at least an average in all of the Eastern States except Maine and Massachusetts; in all the Middle States except Delaware; in the Carolinas, Georgia, and Texas; and in all the Western States except in Kentucky, Illinois, Missouri, Kansas, and Nebraska.

The yield is less than last year on the Atlantic coast as far south as Virginia, except in portions of New England; larger from North Carolina to Florida, and in Mississippi and Texas, and in Ohio and Iowa; the reduction in other Western States ranges from 4 to 57 per cent. The apparent reduction (which may be slightly modified in the final estimate) is about 120,000,000 bushels; the aggregate of local estimates exceeding but slightly 800,000,000 bushels. As the crop of last year was not an average one, the present product is not more than four-fifths of the yield of a good corn-year.

The following extracts from remarks of correspondents in returns of estimates are presented:

MAINE.—*York*: Reduced by cold, wet, and frost. *Waldo*: Below average; season unfavorable. *Piscataquis*: Poor start and did not ripen well. *Oxford*: Planted late; season cold. *Cumberland*: Wet spring and cool June nights kept it back.

NEW HAMPSHIRE.—*Sullivan*: Well ripened by the warm September. *Cheshire*: Injured by long drought. *Hillsborough*: Sound and good. *Carroll*: Injured by the wet spring.

VERMONT.—*Orleans*: Ripened well. *Addison*: Season cold and wet.

MASSACHUSETTS.—*Burkshire*: Fine ripening season.

RHODE ISLAND.—*Washington*: Fall fine for ripening corn.

CONNECTICUT.—*New London*: Better filled ears than last year. *Litchfield*: Fine ripening season.

NEW YORK.—*Allegany*: Never better; no soft corn; no serious frost till October 15. *Richmond*: Shortened by drought. *Montgomery*: Fine ripening and harvesting season. *Columbia*: Ripened well. *Seneca*: Growth retarded by late spring; but the fall has been remarkably favorable. *Fulton*: Fair on uplands; lowlands too wet in the spring. *Broome*: Fine harvest-weather. *Wayne*: Generally poor. *Warren*: Fine ripening season. *Sullivan*: Large and fine crop. *Genesee*: Fine ripening weather. *Wyoming*: Remarkably fine ripening weather; frosts kept off late.

NEW JERSEY.—*Camden*: No killing frost before October 15. *Morris*: Good ripening weather. *Warren*: Large yield and good quality.

PENNSYLVANIA.—*Lancaster*: Heavy growth till earing-time, when it was shortened by drought. *Butler*: Fine harvest-weather. *Westmoreland*: Well matured. *Montgomery*: Well matured; ears large and good. *Fayette*: Good. *Bedford*: Excellent and well matured. *Franklin*: Affected by drought in some places. *Cambria*: Well matured; first frost October 13. *Bucks*: Variable, but generally better than last year. *Lawrence*: Good. *Dauphin*: Short, but good. *Beaver*: Not well filled; much soft corn. *Armstrong*: Fine ripening season; no frost till October 14. *Lycoming*: Bottom crops large; uplands shortened by drought. *Clinton*: The fine closing season made a tolerable crop, which was well secured. *Clearfield*: Fine ripening season. *Washington*: Shortened by drought, but of fine quality. *Susquehanna*: First frost October 3. *Perry*: Cribbed too green.

DELAWARE.—*Kent*: The earliest and the latest crops the best.

MARYLAND.—*Prince George*: Short and inferior. *Wicomico*: Average on lowlands; excellent on uplands. *Washington*: No frost till October 15. *Queen Anne's*: Small crop but well matured. *Howard*: Shortened by drought, especially on dry uplands. *Baltimore*: Too well cultivated to be severely injured by drought. *Caroline*: Good in spite of the long summer-drought. *Montgomery*: Drought.

VIRGINIA.—*Princess Anne*: Lighter yield than was promised in September; fodder abundant. *Pulaski*: Matured well; no frost till October 13. *Mecklenburgh*: Shorter than last year, but of better quality. *King George*: Excellent quality. *Greenville*: Good harvest-season. *Highland*: Best crop for several years, though late in maturing. *Augusta*: Much soft corn. *Nelson*: First frost October 15. *Page*: Good on bottoms. *Henrico*: Fine; late plantings were injured by early drought, but brought out by later rains. *Southampton*: Short, but of good quality. *Roanoke*: Shortened by drought. *Gloucester*: Injurious insects. *Clarke*: Some good crops in the northwest, but a failure in the southwest. *Bedford*: Bottom-crops injured by floods. *Richmond*: Matured very slowly. *Westmoreland*: Injured by bud-worms from May till August. *Prince Edward*: Good on flat land and fair on upland; ready for gathering. *Matthews*:

Unusually fine; but for the bud-worm the yield would have doubled last year's. *Essex*: Season late but propitious; best crop for seven years. *Accomack*: Upper section of the county has doubled last year's yield; the rest shows a fair crop. *Orange*: Yield good in spite of the chinch. *Pittsylvania*: Late corn did not suffer so much from the summer-drought. *Madison*: Grain sound. *Craig*: Good. *Buchanan*: Injured by early drought. *Fluvanna*: Fair. *Middlesex*: Turning out well. *Spottsylvania*: Turning out well. *Rappahannock*: Shortened by drought.

**NORTH CAROLINA.**—*Caldwell*: Two weeks later than last year, and hence not so firm or well matured. *Rowan*: Excellent in grain, and turns out better than was expected. *Randolph*: A very fine crop cut down below average by chinch and floods on bottom-lands. *Franklin*: Far above average where well cultivated. *Wilkes*: In the west of the county, the crop is better than for thirty-five years; eastern upland-crops were injured by drought, but bottom-crops were fine. *Haywood*: Not very well filled and somewhat loose on the cob. *Burke*: Early drought followed by excessive rains and early fall-frosts injured the crop greatly. *Person*: Damaged by drought. *Camden*: Fine gathering season. *Wayne*: Larger acreage than last year and equally fine quality. *Chowan*: Short, but of good quality. *Gaston*: Fair on lowlands; variable on uplands. *Lincoln*: Long drought. *McDowell*: Better than for years. *Robeson*: Turning out well. *Beaufort*: Crop larger and better than last year.

**SOUTH CAROLINA.**—*Union*: Unusually fine season; acreage increased 25 per cent. *Newberry*: Quality improved by late favorable weather. *Marlborough*: Has done well except on flooded lowlands. *Georgetown*: Damaged by storms and rains. *Chesterfield*: Injured by freshets. *Colleton*: Very fine. *Lexington*: Best crop for years. *Fairfield*: Upland-crops greatly improved; lowlands overflowed.

**GEORGIA.**—*Macon*: Increased yield due to increased acreage. *Madison*: Acreage greatly increased. *Hancock*: Best crop since the war. *Sumter*: Yield satisfactory. *Gwinnett*: Best crop for years. *Wayne*: Great ravages by insects. *Wilkes*: Improved upon last year. *Lee*: Very fine. *Carroll*: Heaviest crop for years. *Dawson*: Gathers better than was expected. *Columbia*: Fine crop. *Dougherty*: Best since 1865. *Bullock*: Yield larger than last year, but quality not so good. *Catoosa*: Cut off half by drought.

**FLORIDA.**—*Orange*: Shortened by drought.

**ALABAMA.**—*Corvinton*: Drought; light grain. *Concord*: Drought caused corn to run to shock. *Calhoun*: Drought severe, especially on late corn. *Lawrence*: Short. *Colbert*: Inferior quality and one-half short; selling at \$1 per bushel. *Butler*: Late plantings injured by drought. *Mobile*: Late plantings short. *Shelby*: Decreased yield. *Lauderdale*: Shortened by drought.

**MISSISSIPPI.**—*Amite*: Quality superior. *Holmes*: Drought made the crop short, light and chaffy. *Lee*: Half-crop; acreage increased 20 per cent. *Wilkinson*: The weevil, so damaging for five years past, was but little felt this year; Runner's corn, from the Department, made a very heavy crop. *Grenada*: Very short. *Franklin*: Late plantings largely failed.

**LOUISIANA.**—*Franklin*: Drought and rot. *Rapides*: Improved 75 per cent. on last year both in quantity and quality. *Tensas*: A failure. *Saint Mary's*: Shortened one-half, but of good quality; late corn amounts to nothing. *Madison*: Drought. *East Baton Rouge*: Season unfavorable for late corn. *Richland*: Chaffy and light.

**TEXAS.**—*Matagorda*: Very poor. *Red River*: Drought and chinch-bugs injured the crop very badly. *Harrison*: Light and chaffy. *Burnet*: Fine quality. *Austin*: Light. *Hamilton*: Yellow corn more generally planted than the white, as it is supposed to stand the drought better; white corn from the Department yielded well and ripened ten days earlier than any other variety. *Fayette*: Excellent. *Smith*: Sounder than last year and supplemented by a heavy mast. *Lampasas*: Drought injured the crop, but the yield and quality are 20 per cent. better than last year. *Shelby*: Late crop damaged by drought. *Anderson*: Unpropitious season throughout. *De Witt*: Injured by drought and rains, but the improved quality will compensate for the short yield. *Goliad*: Injured by September rains.

**ARKANSAS.**—*Scott*: Drought. *Washington*: Badly injured by drought and chinch. *Dorsey*: Short and inferior; unfit for bread, and not very good for stock, being badly smutted. *Independence*: Corn has not been so scarce since the war; one-fourth of the people will be without feed for their work-animals. *Fulton*: Worm-eaten and light. *Prairie*: Very light; ground not wet 4 inches since April. *Howard*: Shortened by drought. *Arkansas*: Improved by September rains. *Izard*: Short but better cultivated than usual. *Columbia*: Smutty and poor. *Franklin*: Average on Arkansas River bottoms, but light on uplands. *Baxter*: Almost ruined by chinch and drought.

**TENNESSEE.**—*Obion*: Quality good. *Union*: Drought. *Dickson*: Drought. *Henry*: Drought. *Lauderdale*: Light and worm-eaten. *Wilson*: Very light. *Sullivan*: Crop larger and better than previously estimated. *Bradley*: Early corn inferior; that planted in May is good. *Blount*: Short. *Rhea*: Not so sound as usual. *Washington*: Injurious frosts. *Sevier*: Largest crop ever raised; season remarkably fine. *Monroe*: Light; late-planted somewhat injured by frost. *Gibson*: Almost a failure. *Hardin*:



Drought. *James*: Drought. *Sumner*: But little merchantable corn produced. *Sequatchie*: Escaped the drought by being generally late planted. *Knox*: Short and poor. *Bedford*: Cut down one-half by drought. *Greene*: Late. *Lawrence*: Improved quality. *Lincoln*: Drought.

WEST VIRGINIA.—*Wayne*: Damaged by October frosts. *Tyler*: Increased acreage. *Grant*: Drought, bugs, and frost. *Ritchie*: No rain for four weeks. *Marion*: Dry weather matured the corn well. *Mercer*: Late rains brought up the corn surprisingly, but much of it was late. *Kanawha*: Good on rich land well worked; a great deal of poor corn. *Jefferson*: Drought. *Hancock*: Unusually fine ripening season. *Harrison*: Average quantity and very good quality. *Hardy*: Very bad corn-season. *Gilmer*: Drought. *Doddridge*: Drought. *Brooke*: Large proportion of nubbins husked out. *Boone*: Drought and frost. *Monongalia*: Dry October ripened the corn well.

KENTUCKY.—*Franklin*: Drought. *Lewis*: Old corn brings 70 cents; new corn, 60 cents per bushel. *Marion*: Late corn much injured by an early freeze. *Simpson*: Cut down half by drought. *Scott*: Drought. *Onsley*: Drought. *Ohio*: Drought and frost. *Nicholas*: Drought. *Mason*: Light, chaffy, and loose on the cob. *Lincoln*: Slightly frosted. *Laurel*: Cut down below average by frost. *Jessamine*: One-fourth of last year's crop; drought. *Harrison*: Early plantings well cultivated are above average; late plantings immature. *Hart*: Injured by early frost. *Gallatin*: Late and inferior. *Darless*: Late plantings injured by drought and frost. *Cracken*: Poorly-filled ears. *Boyle*: Greatly improved by September rains; frost kept off late. *Adair*: A little frosted. *Russell*: Frosted. *Livingston*: Considerably frosted.

OHIO.—*Pike*: Drought. *Vinton*: Drought. *Brown*: Well filled and heavy eared. *Butler*: But little rain since July 27. *Champaign*: Drought at earing-time; driest season for years. *Coshocton*: Ripened well before frost. *Hancock*: Largest crop ever grown here. *Huron*: Grain very dry and sound. *Licking*: Very sound. *Lawrence*: Better than for three years. *Lorain*: Fine condition. *Lucas*: Very little soft corn, but many small ears. *Marion*: Extraordinary crop. *Morrow*: Decreased yield, but improved quality. *Mercer*: Has matured well. *Montgomery*: Early plantings good; late did not mature. *Perry*: Well dried out. *Ross*: Good in Scioto bottoms, but elsewhere light and chaffy through drought. *Scioto*: Early plantings injured by windstorms; medium plantings a full crop; late injured by October frosts. *Seneca*: Early, ripened and excellent. *Warren*: Extreme drought; corn worth 60 cents on the field.

MICHIGAN.—*Branch*: Light; drought. *Macomb*: Injured by drought. *Calhoun*: Drought. *Newaygo*: Long drought. *Ottawa*: Drought; well ripened. *Ingham*: Drought. *Lapeer*: Drought and cut-worms. *Lenauee*: Drought.

INDIANA.—*Lake*: A third of last year's yield, but good. *Perry*: Poorest crop in twenty years; no surplus. *Grant*: Well dried out. *Whitley*: Fine season and good crop. *Wabash*: Drought and chinchies. *Decatur*: Drought and chinch-bugs have greatly injured the crop. *Dubois*: Light. *Dearborn*: Drought and frost. *Franklin*: Greatly shortened by drought and chinchies; husked corn in the field sells at 50 cents per bushel. *Fulton*: Chinchies. *Gibson*: Badly injured by chinchies. *Hamilton*: Splendid condition; less soft corn than usual. *Howard*: Largest crop ever raised. *Jennings*: Extreme drought. *Noble*: Half-crop; drought. *Posey*: Yield on Wabash bottoms 60 bushels per acre. *Pike*: Reduced to average by dry-rot. *Steuben*: Good on timber-land; poor on sandy and gravelly soils on account of drought.

ILLINOIS.—*Mason*: Light and poor. *Washington*: Hardly worth gathering, though near timber some fields are passable. *Vermillion*: Not over 70 per cent. of last year's crop in bushels, but superior in quality; some of it light and chaffy. *White*: Suffered severely from chinchies. *Tazewell*: No frost-bitten corn. *Scott*: All sold to feed Missouri hogs. *Saint Clair*: Suffered less from chinchies on the bottoms than on the wheat-growing prairies. *Richland*: Nearly ruined by drought and chinchies. *Pike*: Generally good, though somewhat chaffy. *Pope*: Injured by drought and chinchies. *Ogle*: Light, but well matured. *Montgomery*: Shortened on the prairies by drought and chinchies; better than usual on bottoms. *Madison*: Light. *Macon*: Good. *Macoupin*: Chinchies. *Johnson*: Chinchies worse than last year. *Hancock*: Chinchies. *Franklin*: Chinchies terribly destructive. *Fayette*: Less than half a crop. *Clinton*: Exceedingly poor. *Champaign*: Bugs and drought; great scarcity of water. *Carroll*: Very ripe and sound. *Henry*: Somewhat shortened by drought. *Boone*: Very short, compelling the general sale of hogs. *Henderson*: Injured by drought. *Edwards*: Nearly destroyed by chinchies, except on bottom-lands.

WISCONSIN.—*La Fayette*: Materially injured by chinchies. *Walworth*: Light and poor; drought. *Trempealeau*: Much more favorable season than last year. *Richland*: Good. *Sheboygan*: Well ripened. *Sauk*: Chinchies. *Iowa*: Chinchies in some places. *Fond du Lac*: Drought and cut-worms. *Columbia*: Drought injurious, but partly compensated by fine closing season. *Brown*: First snow-storm October 30; melted as fast as it fell. *Adams*: Some injury from chinchies. *Jackson*: Price, 50 cents per bushel.

MINNESOTA.—*Jackson*: Increased acreage; good crops where not injured by grasshoppers. *Martin*: Totally destroyed by grasshoppers in many places. *Mower*: Best in quality for many years. *Noble*: Almost a failure. *Nicollet*: Drought and grass-

hoppers. *Rock*: Almost destroyed by grasshoppers. *Sherburne*: Damaged by high winds. *Stearns*: Finely matured through delay of frost. *Steele*: Good crops of sound grain. *Sibley*: Not injured by grasshoppers. *Swift*: Well matured. *Wright*: Shortened by extreme heat in July.

**IOWA.**—*Grundy*: Not well filled and loose on the cob. *Woodbury*: Double last year's crop, in spite of grasshoppers. *Winneshek*: In the north, the crop is fine; but in the south, reduced by drought. *Washington*: Condition of the crop variable. *Poweshiek*: Quality first rate; no frost till the crop was dead-ripe. *Pottawattomie*: Cut short by drought and of poor quality. *Polk*: Matured early. *Pocahontas*: Very profitable crop this year. *Page*: Drought. *Montgomery*: Averages 30 bushels per acre, and brings 40 cents per bushel. *Marion*: Turned out surprisingly well. *Jones*: Drought. *Jackson*: Light, but good. *Johnson*: Selling at 40 cents. *Harrison*: About 30 per cent. of the crop was planted after the wheat and corn were destroyed by grasshoppers and turned out poorly; the remainder was very good. *Henry*: Old corn absorbed by feeders at high prices as well as a third of the new crop. *Floyd*: Short, but of good quality. *Des Moines*: Injured by insects. *Dallas*: Ears small but sound. *Calhoun*: Sound and good. *Clinton*: Killing frost October 11, but corn had ripened before it came. *Benton*: Drought. *Story*: Shortened by drought in the silking-stage; will average 35 to 40 bushels per acre. *Plymouth*: Some crops destroyed by grasshoppers.

**MISSOURI.**—*Pemiscot*: Almost ruined by drought and chinchies. *Taney*: Lightest crop ever raised. *Ralls*: Unusually good. *Polk*: A failure; drought and chinchies. *Putnam*: Injured by wind-storms and excessively wet weather. *Platte*: Will be scarce; sells at 75 cents per bushel. *Phelps*: The only tolerable crops were on the bottoms; drought and chinchies. *Perry*: Not enough to fatten pork; some are feeding wheat to hogs. *Nodaway*: Drought. *Moniteau*: Grain poor and fodder worthless; chinchies. *Johnson*: Almost destroyed by drought and chinchies. *Jasper*: Ruined by drought and chinchies. *Holt*: Chinchies very bad. *Franklin*: Drought and chinchies. *Daviess*: Drought and chinchies. *Crawford*: Eaten by chinchies and starved by drought. *Cole*: Drought. *Clinton*: Drought favored clean culture; crop would have been nearly average but for chinchies. *Callaway*: Drought and chinchies. *Adair*: Made chaffy by chinchies.

**KANSAS.**—*Smith*: All destroyed by grasshoppers. *Osage*: Drought, chinchies, and grasshoppers have ruined the crops. *Marion*: Destroyed by drought, chinchies, and grasshoppers. *McPherson*: A total failure. *Leavenworth*: This county raised more corn than all the rest of the State, though the crop here was but 40 per cent. of an average. *Republic*: Almost worthless. *Miami*: Light and chaffy. *Labette*: Good on bottoms, failed on prairies; feeding wheat to hogs. *Montgomery*: Bugs and drought. *Jackson*: Hardly worth mentioning. *Ellsworth*: Drought and grasshoppers. *Bourbon*: Early bottom-crops good; upland a failure. *Brown*: Drought, chinchies, and grasshoppers. *Anderson*: Drought and chinchies. *Allen*: Drought, grasshoppers, and chinchies. *Mitchell*: Total failure.

**NEBRASKA.**—*Richardson*: Sells at 75 cents per bushel. *Lancaster*: Almost destroyed by grasshoppers. *Lincoln*: Damaged by grasshoppers. *Boone*: Destroyed by grasshoppers. *Antelope*: Destroyed by grasshoppers. *Otoe*: Large portions of the county destitute of corn; Texas cattle not fed as extensively as formerly. *Webster*: Eaten by grasshoppers. *Cass*: Will not average 10 bushels per acre. *Pawnee*: Ruined by hot winds, drought, and grasshoppers.

**CALIFORNIA.**—*Mariposa*: Twenty per cent. above average, though some fields were injured by early frost.

**OREGON.**—*Grant*: Injured by early fall-frosts. *Columbia*: Ripens late.

## COTTON.

The cotton-product of 1874, as estimated by our correspondents on the 1st of November, aggregates about three and two-thirds millions of bales. The yield per acre is reported less than in 1873 in most of the States. The weather for ripening and gathering the top-crop has been very favorable. The reports are nearly unanimous in stating that the proportion of lint to seed is large. The percentages of last year's aggregate of bales in the principal cotton-States are as follows: Virginia, 89; North Carolina, 89; South Carolina, 92; Georgia, 93; Florida, 100; Alabama, 95; Mississippi, 90; Louisiana, 85; Texas, 90; Arkansas, 60; Tennessee, 57. This result corresponds very closely with the indications of the monthly statements of condition made by the Department. It is larger than that foreshadowed by the Cotton Exchanges. It is as high as an honest rendering of returns warranted on the 1st of November; and though the fine weather since that date may add



something to the quantity opened and safely gathered, and the large proportion of lint may swell the aggregate, the highest estimate that could be based fairly upon these returns could scarcely reach 4,000,000 bales.

The October statement, which has been misinterpreted, (or misrepresented,) as indicating 3,000,000 bales or less, makes the average for ten cotton-States, 71 per cent. of normal condition, or an impairment of 29 per cent. from all causes, against 79 per cent. last year. So far as condition in October indicated final results in bales, the proportion would be : as 79 is to 71 so is the aggregate yield of last year to that of the present season. This would make, within a fraction, 3,748,000 bales on the same acreage ; but on an area 10 per cent. less, it would mean 3,373,000, or, with the outlying area, fully 3,400,000. The fine season for ripening and gathering accounts for the increase in the final returns, and renders the accuracy of judgment in the two returns almost absolutely identical. As to the necessity that all the monthly reports of condition throughout the growing-season should be identical in their percentages, it is an absurdity and an impossibility, which no man of sense would suggest, as there must ever be a constant warfare between the vital and destroying forces of nature, the current results of which it is the business of our correspondents to report from month to month.

The statement of condition, (100 representing normal condition of healthy development, above which extraordinary vigor and growth may sometimes be written, while all impairment of vitality or reduction of healthful growth are represented by lower figures,) during the growing-season of 1874, has been reported as follows ; the figures being in each case an average, for the State named, of the county percentage of normal condition, by the side of which are placed similar State averages for 1873 :

States.	June.		July.		August.		September.		October.	
	1873.	1874.	1873.	1874.	1873.	1874.	1873.	1874.	1873.	1874.
North Carolina .....	85	89	91	102	95	95	95	87	88	83
South Carolina.....	88	81	82	88	87	97	86	86	80	80
Georgia.....	94	80	94	91	95	94	90	77	82	80
Florida.....	102	90	99	96	103	102	85	77	76	81
Alabama.....	93	82	85	92	91	90	85	81	78	75
Mississippi.....	92	78	83	87	88	89	82	74	75	74
Louisiana.....	94	70	80	73	86	83	80	62	65	62
Texas.....	86	90	78	102	83	105	92	65	80	70
Arkansas.....	92	90	106	94	93	87	93	47	83	55
Tennessee.....	90	85	96	97	95	83	92	52	90	56

The condition of the crop in June was reported lower than in the same period of 1873 in every State except Texas and North Carolina. Louisiana, which suffered most by floods, made the lowest average ; Mississippi next ; Georgia, South Carolina, and Alabama coming next in order. Saturating rains, causing overflows of every spring-branch as well as larger streams, left cotton more unthrifty, irregular, and stunted in appearance than for years at the early stage of its growth. The writer of this visited most of the cotton-States, and can testify to the reliability of the first report.

After the rains came exceptionally fine weather ; stands were perfected by replanting ; the plants took root more firmly in the warm soil ; growth became rapid ; and vigilance stimulated by recent fears of utter failure kept the field unusually clear of grass, so the July returns everywhere indicated improvement, as those of the previous year had shown decline of condition. A comparison of the two years in July shows higher con-

dition in 1874 in North Carolina, South Carolina, Alabama, Mississippi, and Texas. In August, a record of continued improvement was made in all the States except North Carolina, Alabama, Arkansas, and Tennessee; deterioration being noticeable in the latter two. At this point in the comparison with 1873, a decline commences in the condition of cotton of the present season, though it is mainly seen in Arkansas and Tennessee, very slightly in Georgia, Florida, Alabama, and Louisiana, while in South Carolina and Texas a higher condition is marked than in August last year.

In September this slight difference is widened, especially by the low returns of Tennessee, Arkansas, Louisiana, and Texas, resulting from drought and drying winds and other causes, which would have made still greater reduction of product but for the fact that losses from the caterpillar were far less than in 1873. In October, there appears a slight improvement in Georgia, Florida, Texas, Arkansas, and Tennessee; small reduction in the Carolinas and Alabama; and in Mississippi and Louisiana no change is indicated. The general average for this month is 71.

The pretense of misunderstanding the Department system of crop-reports on the part of a small class of cotton-speculators, whose aim is to deceive for mercenary ends, is palpably dishonest; the mass of planters, factors, and manufacturers find no difficulty in the premises, and express their appreciation of the fullness and honesty of the returns.

There are but three general inquiries each season: 1. The *acreage*, expressed as a percentage of the total area of the previous year in each county. 2. *Condition*; normal vitality and growth being the unit of comparison, or 100. 3. *Product*; or total quantity in each county as compared with the actual yield of the previous year. The first and last of these are each given but once, but "condition" is reported monthly through the season.

Now, the moment the plant has germinated and emerged from its natal bed, the report of its "condition," its appearance as to vigor and size, is seized upon by cotton-gamblers, and the figures for *condition* are instantly transmuted into those of ultimate *yield*, and dishonestly published as the "Bureau's" prediction of the crop. The next month cotton may be submerged by rain or choked by grass, and the "average" condition may be greatly impaired, and be so reported, as it must be if reported fairly. [It is only in bear-gardens on Manhattan Island that "cold, wet springs are usually favorable to cotton which has been previously planted."] Then the figures are produced again, and exhibited as a prediction of half a crop, and the growl of the bears at "inconsistency of the Bureau" in reporting the truth rises above Wall street. Stimulated by the fear of utter failure and blessed with highly favorable weather, planters succeed in cleaning the crop and giving it lease of life and possible vigor and fruitfulness, and the next report, truthful and accurate, makes the condition higher. Perhaps in August or September worms may devastate whole districts, and destroy cotton to the value of tens of millions of dollars, reducing the average condition very materially. Then comes an ursine howl from speculators, who growl that the report is inconsistent with that of the previous month. So with all the vicissitudes and calamities to which the crop is subject, causing reports of condition to vary from month to month with the changing circumstances which affect present growth and apparent health of the plant. Men of sense and judgment know that this cannot be otherwise, while another class either stupidly or wickedly substitute ultimate yield for present

condition, and declare that the Department of Agriculture makes the monthly predictions thus dishonestly concocted by themselves.

Some go still farther in their dishonesty. After making such false deductions in a given year, they continue the next their tabulations of product in bales from current reports of condition of the immature crop, and, instead of taking percentages of the last year's crop, they make their comparison, when it suits their purposes, with their own fabrications imputed to the Department as actual estimates. And, worse still, they make their calculations, either from malice or ignorance, by false percentages. For example: if in a given State, the reported area is 20 per cent. less, and condition upon that area 10 less, they make the loss 30 per cent., when 10 per cent. reduction from 80 per cent. of present area makes the actual loss  $20+8$ , or 28 per cent. Should there be 50 per cent. reduction upon an area 50 per cent. of that of the previous year, the proper expression (except that there is *no* propriety in writing amount of yield when only condition of growing plant is meant) would be 25, or a loss of 75 per cent., instead of which these sapient mathematicians add the two fifties, and write the loss 100 per cent. Should the reduction of area be 60 per cent., and that of condition 50, of course these wise calculators would make a reduction of 110 per cent., and charge the 10 per cent. below zero to "the Bureau."

Recent tables, thus made in defiance of truth, honor, and mathematics, have misrepresented by nearly half a million bales the real indications of the Department's monthly history of condition. It is not expected that speculators should deal fairly or honestly, and their course is of no sort of consequence, except that honest men may be misled by their blatant falsehoods in a matter of some importance.

There is one point that should be better understood. The statistician does not evolve cotton-estimates from his inner consciousness, nor make guesses from a small number of data, but simply gives a fair expression of the returns made by planters, (not Government officials, as has been falsely charged,) only correcting obvious errors and eliminating unreliable material. As to the history of the growing crop, with its vicissitudes and changes, as recorded in reports of condition from June to October, there has never been a method approaching it in fullness and accuracy; and no cotton-merchants nor sidewalk-planters can possibly equal it. As to ultimate estimates of yield, the interests of producers are a conservative force tending to low estimates, and if their aggregate is slightly too low it must be given, and not the arbitrary dictum of the statistician. At the same time, correspondents are urged to deliberate and accurate judgment; and whenever a bias is shown, or strongly suspected, such figures are slightly modified or discarded in sheer justice to the more reliable majority. Further than this the statistician is not at liberty to go, and there his responsibility ceases. Thus is the planter's estimate made up but once, annually, at the close of the season, not monthly from the date of planting; and whether it is as high as consumers would like or not, it is the fairly-written estimate of the producers, and is taken by intelligent men as such.

If such bias exists, it is generally less than in other local reports; those of the cotton-exchanges usually representing lower cotton-prospects than Department returns, though the exchange-reports are more indefinite in their modes of expression. For instance, there may be thirty reports of growing cotton in Tennessee, twenty indicating decrease, ten increase of yield; but those counties might possibly be the ten which have heretofore produced four-fifths of the crop of a State which now includes ninety-three counties.



The following is a careful statement of the exchange-reports of the season, which are in their tenor strikingly like those of this Department, except that their indications point to somewhat lower estimates.

The GALVESTON COTTON EXCHANGE, from statistics gathered early in April, reported an unfavorable planting-season in thirty-eight counties of Texas, and a favorable season in sixteen counties. Of these fifty-four counties, nineteen report an increase of acreage, averaging 15 per cent. upon last year; in twenty-one counties, the decrease averages 10 per cent.; the remaining fourteen report the same acreage as in 1873.

The MEMPHIS COTTON EXCHANGE, from reports received from ninety-four counties in Tennessee, Mississippi, Arkansas, and Missouri, of date averaging May 20, estimates the acreage in cotton in those counties at 8.1 per cent. below that of 1873, and 3.1 per cent. below that of 1872. Planting-operations, on an average, were sixteen days later than in 1873. Of the area planted, 55 per cent. had come up; one-half the stands were bad; one-fourth, fair; one-fourth, good. Drought is alleged as the cause of this poor condition.

The GALVESTON EXCHANGE, about the 1st of June, from correspondence in sixty-six counties of Texas, reported that the early season had been less favorable than in 1873. Of these counties, twenty reported an increase of acreage, ranging from 10 to 20 per cent.; nineteen an increase of 5 to 15 per cent.; twenty-two the same acreage as in 1873. Only seven hundred acres had been abandoned. Good stands were reported in forty-two counties, and bad or indifferent in nineteen; crop generally from ten to twenty days later than last year.

The MOBILE EXCHANGE, from correspondence in twenty-seven counties in Alabama, average date about June 1, reports an unfavorable planting-season in only six counties. It was stated that January and February had been rather favorable; March and April cold, with excessive rains; May rather dry. The growing-season was less favorable than in 1873. The reduction in acreage averaged 12 per cent., besides about 2 per cent. abandoned after planting; 33 per cent. had been replanted. Early stands were poor; such of the replanted crops as had come up were rated from fair to good.

The same authority, from correspondence in seventeen counties in Mississippi, stated the season to have been generally unfavorable—excessively wet up to May 1, and excessively dry afterward; only two counties reported the weather as favorable as in 1873. The acreage planted had decreased 8 per cent., besides 5 per cent. abandoned; 25 per cent. had been replanted. The crop was "more backward than poor." Dry weather had injured late plantings.

The same authority also reports, for six counties in Tennessee, a season everywhere too dry and less favorable than last year, with a decrease in acreage of 7 per cent. Planting here is generally a month later than in the Gulf States.

The NEW ORLEANS EXCHANGE gave the following summary of reports up to July 1: *Mississippi*: Forty-four counties; acreage decreased 7 per cent.; fair average condition; crop two weeks later than last year; clean, though small and backward. *Louisiana*: Twenty-six parishes; acreage decreased 20 per cent.; weather less favorable than last year; plants in good condition, but backward. *Texas*: Forty-five counties; acreage increased 15 per cent.; stand good; planting two weeks later than last year, but in fine growing condition. *Arkansas*: Twenty-five counties; acreage decreased 8 per cent.; weather less favorable, but stand better than last year, though three weeks backward. *Tennessee*: Twenty-four counties; decrease of acreage, 3½ per cent.; weather favorable; stands

fair and clean, but small; two weeks later than last year. *Alabama*: Twenty-seven counties; acreage decreased 16 per cent.; late-planted looks better than old cotton; crop late, but clean and growing fast. *North Carolina*: Forty-one counties; average decrease in acreage, 19 per cent.; weather less favorable; stand, fair average; crop healthy and clean, but planted two or three weeks later than last year. *South Carolina*: Twenty-one counties; acreage decreased 17 per cent.; weather unfavorable; fair average stand since replanting; plants small, but in good condition, clean and growing well. *Georgia*: Sixty-nine counties; decrease of acreage, 10 per cent.; weather less favorable; stand and condition good; plants clean and growing finely, but small, and ten days later than last year. *Florida*: Reports meager; acreage decreased 4 per cent.; stand and condition good; plants clean and growing well; a week earlier than last year.

The MEMPHIS COTTON EXCHANGE report for July, from two hundred and eighty-six letters, counties represented not specified, says that one hundred and eighteen report favorable weather, and the rest unfavorable. Of the land planted,  $2\frac{3}{4}$  per cent. had been abandoned. Of late plantings, one hundred and seventy-five report stands better than last year, and one hundred and five not so good; two hundred and six report cotton well formed and balled; sixty report the opposite; one hundred and forty state condition better than last year; fifty-two the same; fifty-three not so good. Of late plantings, one hundred and sixty-five report better stands than last year, and one hundred not so good; one hundred and forty report cotton well formed and balled, and one hundred and thirty otherwise; one hundred and two report better condition than last year; seventy-four the same, and ninety not so good; 42 per cent. was planted early; 20 per cent. after May 1; 29 per cent. came up after June 1; cultivation better than for years; drought since May 15 generally complained of.

The GALVESTON, July report embraces one hundred and thirty-nine replies from sixty-one counties of Texas, dated from May 27 to July 10, but does not report by counties. Of correspondents, one hundred and twenty-five say that the weather, after May 27, was more favorable than last year; eight about the same; six less favorable; one hundred and twenty-three report good stands, and sixteen poor ones; thirty-nine say the crop is earlier than last year; seventy-four later; twenty-six the same; one hundred and thirty-eight report the crop in good condition; nine fair; two poor and unpromising.

The MOBILE, July report presents the following summary: *Alabama*: Forty-six counties; weather since June 15 was rainy in twenty-nine; seasonable in fifteen; dry in two; in nineteen more favorable than last year; sixteen less favorable, (the last all south and east of Montgomery.) Of early plantings, thirty-six report poor stands, and ten fair to good; in late plantings, the proportions are reversed; thirty-four report cotton well formed and balled, and twelve not so; thirty-nine report fair to good condition, and in early plantings better than last year; seven poor, and worse than last year. *Mississippi*: Twenty counties; seventeen report weather more favorable than last year; four abandonment of plantings from  $2\frac{1}{2}$  to 5 per cent.; in thirteen, half the stands of early cotton are not good; in five, average; in two, good; late plantings from average to good; early plantings well formed and balled; late plantings have good forms, but few bolls.

SAVANNAH, July report.—*Georgia*: sixty-five counties; weather generally too wet; few lands abandoned; stands poor for early plantings, and the reverse for late; early cotton well formed and balled in Middle

and Southern Georgia; late cotton too tall and long-jointed; caterpillar appeared in Southwestern Georgia; rain producing too rapid growth. *Florida*: Fifteen counties; too much rain; almost as favorable as last season; stands compare well with last year, late being the best; plants growing too fast and not bearing well; condition compares well with last year; early the most promising; some apprehensions from worms.

NASHVILLE, August report.—*Middle Tennessee*: Forty-five letters from eighteen counties, but the counties are not distinguished. One letter reports good weather; six average, and thirty-eight severe drought; weather reported ruinous by two; moderately favorable by six; injurious by thirty-eight; two report condition better than last year; six expect an average crop; thirteen three-fourths of a crop; thirteen, one-half; six, one-third; five, one-fourth; twenty-two report good fruitage; twenty-three, poor; twenty-one report shedding of leaves and bolls; twenty, shedding badly; four, not shedding at all—plants very small, owing to severe drought. *North Alabama*: Forty letters from ten counties, not distinguished; twenty report severe drought; five, dry; five, average; thirty-five report the crop damaged; five, moderately good; four, better than last year; five, average; five, seven-eighths of a crop; seven, three-fourths; ten, two-thirds; nine, one-half; twenty-five report good fruiting; fifteen, poor; twenty-four report shedding; sixteen, shedding badly.

September report of the NATIONAL COTTON EXCHANGE.—NEW ORLEANS DEPARTMENT.—*Mississippi*: Twenty-five counties; excessive drought causing leaves and forms to fall, especially on hill-lands; disastrous since the first week of August. *Louisiana*: Thirty parishes; drought causing premature opening and shedding; growth stopped and fruitage checked. *Arkansas*: Seventeen counties; extreme drought since July 15 caused severe shedding, stopped growth and fruitage, and caused great despondency among planters.

MEMPHIS DEPARTMENT.—*West Tennessee and eight counties of Mississippi*: Drought through nearly the whole department since July 15, stopping growth and causing shedding of forms and bolls; condition much below last year.

NASHVILLE DEPARTMENT.—*Middle and East Tennessee*: Eighteen counties; damaging drought; condition below last year; fruitage good, but plants shedding badly. *North Alabama*: Ten counties; drought reduced the average condition below last year; shedding badly.

NORFOLK DEPARTMENT.—*Virginia and part of North Carolina*: Thirty-one counties represented by sixty-three correspondents; of the latter, forty report favorable weather and twenty-three unfavorable; thirty-eight, vigorous and healthy growth; twenty-five rust and decaying foliage; forty-nine, condition good; fourteen, below last year; fifty-two, good fruitage; eleven, poor fruit, and shedding.

WILMINGTON DEPARTMENT.—*Part of North Carolina*: Sixteen counties; good condition; fruiting well.

CHARLESTON DEPARTMENT.—*South Carolina*: Thirty counties; weather up to August wet and cool, and then hot and dry; too rapid growth, causing much shedding.

SAVANNAH DEPARTMENT.—*Georgia*: Sixty counties; weather seasonable or rainy up to August 1, when it became hot and dry; plants fruited well, but shedding; crop in a critical state; fruitage below last season. *Florida*: Nine counties; fruited well to August 1; drought then caused shedding and checked fruitage; condition better than last year; light-lands rusting.

MOBILE DEPARTMENT.—*Alabama*: Fifty-one counties; forty-two re-



port weather dry and hot; six dry since August 1; three seasonable; thirty-six report very unfavorable effects, shedding and stoppage of growth; eleven better condition than last year; fifteen the same; twenty-six worse. *Mississippi*: Twenty counties; dry and hot since August 1; effect bad in all but two; stoppage of growth and shedding of fruit; on sandy uplands no fruit since August 1.

**GALVESTON DEPARTMENT.**—*Texas*: Sixty-two counties; dry and hot since July 15; partial rains between 15th and 20th of August; uplands suffered severely, bottoms little; fruited well, but shed badly.

**SAINT LOUIS DEPARTMENT.**—*Missouri*: Five counties; damaging drought. *Kansas*: Five counties; condition better than last year. *Indian Territory*: Drought very injurious.

**GALVESTON**, September report.—Forty-nine counties in Texas; thirty-four report weather dry and hot up to September, with heavy rains since; forty-three, injuries from rain, which prevented picking, beat out cotton, &c.; twenty-one, injury from worms; eight, the crop larger than last year; forty-one, less, the average decrease being one-half. Unless the correspondents are mistaken, the crop of Texas will be 20 per cent. short of last year.

**SAVANNAH**, September report.—*Georgia*: Fifty-eight counties; dry and hot since August 20, caused premature opening and profuse shedding; bottom crops not injured. If frost is about the usual time, Southwest Georgia will yield a little more than last year; Middle Georgia will decline 15 per cent.; northern counties, 20 per cent. Fine picking weather. *Florida*: Nine counties; three correspondents report the weather seasonable, the rest, as hot and dry, stopping growth and causing rust and fall of fruit; crop less on the sea-islands than last year, but greater in the middle and west; opened very fast.

**MEMPHIS**, September report.—Fifty-four letters from West Tennessee; fifty-one from North Mississippi; thirty-one from Arkansas, north of Arkansas River; and ten from North Alabama; counties not distinguished; average date, September 20. Of one hundred and forty-nine responses, sixty-seven indicate dry, warm weather; sixty-six, generally dry, with local showers; fourteen, abundant rain; two, too much; sixty-four report serious shedding of fruit; twenty-three, improved growth of bolls; twenty-seven, second growth too late for maturity; eighty-one, premature opening of bolls; seven, open cotton soiled, and beaten out by rain; thirteen, crops not seriously affected; upland plantations entirely open, with small bolls, short and light staple, and almost worthless seed. In many cases, freedmen, having realized their interest in the crop in previous advances, were indifferent about picking it out. Great anxiety among planters.

**NASHVILLE**, September report.—Only half as many letters as in the August report. Counties not distinguished. *Middle Tennessee*: Twenty-six letters from eighteen counties; seven letters report favorable weather; twelve, showery; eight, drought; eleven, a second growth of staple; four, no change; four, improvement; ten estimate the yield at one-third of a crop; eleven, one-half; three, two-thirds; two, three-fourths, making the average a little lower than in the previous report. *North Alabama*: Twenty-seven letters from ten counties; twelve report drought; twelve, favorable weather; eight, unfavorable; six report shedding of squares and bolls; five, no change; four, second growth; three, improvement, rust; eleven estimate the yield at half a crop; eleven, two-thirds; five, three-fourths; present prospects not capable of material improvement, even with the best of picking weather; frequent complaints of the indifference of freedmen in picking out the crop.

MOBILE, September report.—*Alabama*: Forty-five counties; thirty-one report drought and heat; fourteen, generally seasonable with occasional showers; thirty-seven, stoppage of growth, shedding, and rotting in many places, destroying the top-crops; eight, good results of drought on bottoms and stiff lands; twenty counties, mostly stiff bottom-lands, estimate 10 per cent. increase of yield; twenty-five upland counties, 11 per cent. decrease; premature opening; estimates of decline from August prospects vary from 25 to 50 per cent., average 33. *Mississippi*: Nineteen counties; sixteen report drought and heat; three, seasonable weather; effects of drought serious, shedding and premature opening of bolls; thirteen expect 33 per cent. of last year's yield; five, still less; one, no decrease.

NATIONAL COTTON EXCHANGE, October reports.—CHARLESTON DEPARTMENT.—*South Carolina*: Sixty-two letters from twenty-seven counties, not distinguished; fourteen report slight damage from frost; four, serious damage; fifty-eight, favorable weather since September 29; three, unfavorable; average decrease of yield from last year, 19 per cent.

SAVANNAH DEPARTMENT.—*Georgia*: Forty-nine counties; frost in all except the extreme south, but only injurious in the extreme north; increase of 10 per cent. expected in the south; 10 to 15 per cent. decrease in the middle; 20 per cent. in north; weather can no longer affect the yield; fine picking-season; more rapid marketing of crop than ever before. *Florida*: Sixteen counties; no injury from frost; fine picking-season; yield about the same as last year in the sea-island district; in the upland districts, one county decreased; the remainder increased at an average of 25 per cent.; drought favorable to lint, but top-crop cut off.

AUGUSTA DEPARTMENT.—*Georgia*: Thirty-two counties; all lowland crops damaged, and uplands in the north belt slightly; middle-belt uplands not injured; favorable picking-weather; decrease of yield in three counties, 50 per cent.; in thirteen, 33 per cent.; in eleven, 25 per cent.; in five, 10 to 20 per cent.; crop clean and rapidly marketed.

MOBILE DEPARTMENT.—*Alabama*: Thirty-seven counties; little injury from frost; good picking-weather; twelve counties report from 5 to 100 per cent. increase last year, averaging 25 per cent.; one, no change; twenty-four, a decrease from 10 to 50 per cent., averaging 25 per cent.; crop picked earlier and cleaner than usual. *Mississippi*: No frost; good picking-weather; one county expects 25 per cent. increase; one, no change; the rest, decrease from 10 to 50 per cent.; average, 33.

NEW ORLEANS DEPARTMENT.—*Louisiana*: No injury from frost; good picking-weather; yield a little greater than last year, increase averaging 10 per cent.; injured by drought, but clean and bright. *Mississippi*: Twenty counties; little or no injury from frost; good picking-season; average decrease of yield 25 per cent.; complaints of light and short lint yield. *Arkansas*: Little damage from frost; good picking-season; decrease of yield 25 to 66 per cent., average, 41; river-bottoms may turn out better; finest picking-season will not balance the drought.

GALVESTON DEPARTMENT.—*Texas*: Fifty-nine counties; no frost; heavy rains from September 20 to October 1, but very favorable picking and ripening weather afterward; thirteen counties that failed last year report an increase; thirteen, a decrease of 10 to 25 per cent.; nineteen, 25 to 50 per cent.; six, 50 to 75 per cent.; eight, no decrease; caterpillars destroyed the top-crop of some coast-counties; some expect a top-crop, but others say it is too late to mature.

NASHVILLE DEPARTMENT.—*Middle Tennessee*: Eighteen counties; considerable damage from frost; good weather for picking; average decrease of yield estimated at 50 per cent. against the estimate of 46 per cent. in last report. *Alabama*: Ten counties; considerable damage from frost; almost universally a good picking-season; average decrease of yield, 40 per cent.

NORFOLK DEPARTMENT.—*North Carolina and Virginia*: Thirty-six counties; nine report damage from frost; in some cases, frost beneficial in checking weed-growth; very favorable picking-season; six counties report increase from 15 to 20 per cent.; nineteen, decrease 10 to 15 per cent.; twenty, from 20 to 25 per cent.; nineteen, 33 per cent.; weather can only affect the quality of cotton unpicked.

MEMPHIS, December report.—One hundred and seven responses from North Arkansas, West Tennessee, North Mississippi, and North Alabama; counties not designated; forty-three report damage from frost, averaging for the whole  $3\frac{1}{2}$  per cent.; average decrease of acreage  $1\frac{1}{2}$  per cent.; due exertions made to save the crop; picking will close about December 7; unprecedentedly rapid marketing; entire crop will be saved in better order than usual.

The following brief extracts from remarks accompanying reports are appended:

VIRGINIA.—*Prince George*: Larger yield than was anticipated. *Dinwiddie*: Shortened 20 per cent. by frost; no top-crop; much stained and yellow cotton. *Southampton*: Much injured by heavy frosts. *Sussex*: Shortened 25 per cent. by cool weather—quality excellent.

NORTH CAROLINA.—*Rowan*: Shortened by drought in August and by frost in October. *Wake*: Not over 150 pounds of lint per acre. *Franklin*: Yield better than was expected. *Wilson*: Picking-season unusually fine; acreage estimated at 12,000 acres, producing 7,200 bales. *Alexander*: Late spring and early fall frosts very injurious. *Stanly*: Favorable season for late-opening cotton. *Camden*: Yielding well. *Chowan*: Short, but of good quality. *Mecklenburgh*: Top-crop frosted; bolls opening fast. *Gaston*: Early frost has done damage not yet appreciated. *Beaufort*: Fine October weather has enlarged the yield; mostly picked and marketed. *Polk*: More cotton planted than usual, but it was taken by a killing frost October 12; much of it will be yellow. *Columbia*: Fine season. *Wayne*: The blight, rust, worms, and lice passed away without inflicting much damage. *Lincoln*: Injured by summer-drought and fall-frost. *Robeson*: Yield of lint better than usual. *Pasquotank*: Acreage not over half of last year's, but the product will be only 10 per cent. less. *Anson*: Late cotton has greatly improved.

SOUTH CAROLINA.—*Orangeburgh*: First killing frost November 1. *Union*: Unfavorable season. *Newberry*: Fine gathering and ripening season. *Marlborough*: Not a full crop, but equal to last year's. *Georgetown*: Injured by storm and rain. *Beaufort*: Below last year. *Colleton*: Sea-shore crop superior to any since the war. *Lexington*: Short but good. *Fairfield*: Maturing-season better than the growing-season.

GEORGIA.—*Decatur*: Crop greatly improved. *Madison*: Suffered from a variety of adverse influences; half of last year's crop. *Hancock*: Short; will be marketed within thirty days. *Hart*: Great falling-off in the crop; late crop frosted. *De Kalb*: Somewhat frosted; finest gathering-season for years. *Douglass*: Killing frosts in October; still greater injury in quality than in quantity; very favorable harvesting-weather. *Walton*: Late fine weather will bring the crop nearly up to last year's yield. *Upson*: Decreased acreage, and average yield; about a bale to five acres. *Taliaferro*: Fall favorable to the development of lint-cotton, partly compensating the loss of the ground-crop from hot winds and other unfavorable conditions. *Sumter*: Excellent season for gathering; more fair cotton gathered than in any previous year. *Glynn*: No frost yet. *Gwinnett*: Greatly injured by October frosts; but the proportion of lint unusually large, amounting to a third in weight of the seed-cotton. *Clayton*: Picking-season fine; crop of fine quality, but 25 per cent. short; poor stand and drought. *Butts*: Falling off from last year, but quality better. *Wilkes*: Short crops and low prices. *Morgan*: Ice, October 31, froze many bolls; shipments in excess of last year; planters ginning and selling as fast as possible; lint good and well saved. *Lee*: Unexpectedly large proportion of lint to seed. *Terrell*: Drought reduced the crop a third below last year's. *Heard*: Good gathering-season; fatal frost October 13. *Jefferson*: Cotton three-fourths of a crop; quality good. *Banks*: Injured by frost; much yellow



cotton. *Richmond*: Proportion of lint 20 per cent. above average. *Miller*: Top-crop cut off by drought. *Forayth*: Heavy frost October 12 injured the crop, which was generally late. *Carroll*: Early frost. *Dawson*: Frost. *Columbia*: About half of last year's yield. *Dougherty*: Better than was expected; probably a larger yield than last year. *Telfair*: Short; good gathering-season. *Bullock*: Decreased acreage and yield. *Catoosa*: Increased acreage and yield. *Whitfield*: Not gathering so well as was expected. *Gordon*: Killing frosts in October. *Muscogee*: Shortened by drought on uplands and by worms on bottoms. *Murray*: Shortened 40 per cent. by worms.

FLORIDA.—*Gadsden*: Fine weather for opening and picking; crop rapidly marketed. *Suwannee*: Crop light and late. *Orange*: Short of last year's yield. *Jackson*: Yield increased by the closing season.

ALABAMA.—*Covington*: Average lint-product per acre fell off 14 per cent. *Conecuh*: Fine picking-weather. *Lowndes*: Fine closing season; yield improved. *Calkoun*: Late bolls all frosted. *Lawrence*: Short. *Colbert*: Half of last year's yield. *Clarke*: Short of last year through drought. *De Kalb*: Late plantings damaged by October frosts; good picking season. *Blount*: A falling-off of 1,000 bales from last year in this county. *Greene*: All the bottom-cotton was frost-killed October 12; some left on hills and ridges; crop very short and will not go far toward paying the farmers' debts. *Hale*: About 9,000 bales against 7,000 last year; we made 17,000 in 1870.

MISSISSIPPI.—*Washington*: Killing frosts. *Amite*: Loss from drought partly compensated by the fine growth of the closing season; quality superior. *Holmes*: Shed badly from drought; subsequent rains caused second growth; there will be no surplus. *Le Flore*: Killing October frosts. *Jefferson*: Mostly picked; 25 per cent. short of last year; killing October frosts. *Madison*: Yield somewhat improved; quality good. *Lee*: Lint good; seed small, and promises to sprout poorly next year. *Winston*: Very short. *De Soto*: Crop short and prices low. *Rankin*: Unusual proportion of lint. *Lincoln*: Opened prematurely by drought. *Lauderdale*: Late plantings ruined by drought. *Carroll*: Reduced yield. *Tishomingo*: Fine picking-season. *Grenada*: Yield increased by fine picking-season. *Covington*: Drought. *Franklin*: A third short. *Pike*: Somewhat improved by late picking-season.

LOUISIANA.—*Jackson*: Two months of fine closing season have been greatly in favor of the crop, though the top-crop is almost worthless. *Franklin*: Shortened by floods, drought, and cut-worms. *Rapides*: Better than last year; yield of lint double. *Tensas*: Very fine picking-season, enlarging the lint-product. *Union*: Yield better than was promised in September. *Caldwell*: Fine ripening and gathering season. *Washington*: Drought. *Morhouse*: Increased yield from fine picking-weather. *Madison*: Finest picking-season in five years; lint of good quality; white frost October 13. *East Baton Rouge*: Fine closing season. *Richland*: Injured by heavy rains in September.

TEXAS.—*Matagorda*: Not over half a bale of lint per acre, the ordinary yield being 500 pounds. *Fort Bend*: Fine ripening and picking season greatly increased the product. *Kaufman*: Late frosts cut off late bolls. *Washington*: Fine closing season brought the yield up to last year's. *Red River*: Great improvement. *Houston*: Fine picking-season. *Harrison*: Very short. *Ellis*: Much will yet ripen if the weather continues favorable. *Cherokee*: Many fields have not made a bale to five acres. *Burnet*: Worms injurious. *Austin*: Very little top-cotton; 15 per cent. rotted by excessive rains. *Fayette*: Crop improved in the eastern part of the county. *Upshur*: Improved yield of lint has raised the product per acre above last year's. *Williamson*: Last picking shortened by worms. *Waller*: Ripened rapidly in the charming weather; fully five-sevenths of the crop already marketed. *Victoria*: Injured by freshet. *Smith*: Yielding better than was expected. *Medina*: Greatly improved. *Montgomery*: Fine growing and picking weather since September 23. *Hunt*: Shortened by drought. *Parker*: Late bolls will not mature. *Laraca*: Cost of production exceeds the price. *Caldwell*: Top crop may yet come out. *De Witt*: Damaged by rains and wet weather. *Wilson*: A bale to four or five acres against a bale per acre last year. *Bezar*: Greatly damaged by September rains. *Goliad*: Injured by September rains. *San Jacinto*: Large yield of lint in proportion to gross product.

ARKANSAS.—*Scott*: Drought. *Dorsey*: A very serious failure. *Independence*: Short, but all saved in the fine picking weather. *Jackson*: Injured by heavy rains in September causing a second growth. *Sevier*: A bale from six acres. *Fulton*: The middle and best crop was destroyed by drought; the top crop by frost. *Pulaski*: Three-fourths already marketed. *Prairie*: Inc eased acreage will bring the yield up to 60 per cent. of an average. *Crittenden*: Frost damaged late cotton. *Bradley*: Better lint yield. *Howard*: Shortened by drought. *Arkansas*: Short, but greatly improved. *Izard*: Upland crops nearly destroyed by wet in spring and drought in summer. *Columbia*: Short, but of improved quality. *Franklin*: Bottom crops average; uplands a fourth of a crop. *Van Buren*: September rains caused the crop to take a second growth, but too late to mature.

TENNESSEE.—*Lauderdale*: Almost a total failure through drought and wet. *Henry*: Short. *Gibson*: Almost a failure. *Hardin*: Half crop; good quality. *Bedford*: Drought.

## POTATOES.

Our November returns show a yield of potatoes but little less than last year. The only States equaling or exceeding last year's yield are, New York, 192; Rhode Island, 100; Connecticut, 110; South Carolina, 104; Illinois, 106; Wisconsin, 110; Iowa, 135; and Oregon, 104. These States produce about one-eighth of the entire crop. In northern New England the rot was prevalent. In the Middle States, drought and the Colorado beetle are the leading causes of decline. In most of the Middle and South Atlantic States the crop is largely decreased, Maryland losing a third. A heavy decline is noted in the Gulf States, and a still heavier one in the inland Southern States, where an unprecedented drought crippled vegetation generally. North of the Ohio River, the same destructive influence was felt to a minor degree. The Colorado beetle was here less formidable than in former years, but still gave some traces of its mischievous power. West of the Mississippi River, the ravages of grasshoppers were serious in many localities, while in Johnson County, Missouri, the chinch-bug varied its usual diet by devouring potato-vines and tobacco, in addition to the corn. California reports a decrease of 9 per cent. In Oregon, the potato-blight appears to be decreasing.

MAINE.—*Penobscot*: Rotted badly. *Waldo*: Loss heavy from rot. *Piscataquis*: Extra in quantity and quality, though many crops were affected by rot. *Oxford*: Quality good, though there was considerable rot.

NEW HAMPSHIRE.—*Sullivan*: Some rot. *Cheshire*: Shortened by long drought. *Hillsborough*: Crop large, but tending to rot. *Carroll*: Crop not so large as last year, but of better quality.

VERMONT.—*Rutland*: Some rot. *Orleans*: Good market for potatoes through the starch manufacture. *Caledonia*: Injured by rust. *Addison*: Unusually good. *Franklin*: Plenty and good.

MASSACHUSETTS.—*Berkshire*: Crop short and prices rising.

RHODE ISLAND.—*Washington*: Large and good crop.

CONNECTICUT.—*New London*: Some rot; yield large.

NEW YORK.—*Richmond*: Shortened by drought. *Columbia*: Shortened by drought. *Seneca*: Colorado beetles not very injurious. *Jefferson*: Late plantings shortened by drought, but the crop is generally good and sound. It has been found best to plant as early as practicable. *Genesee*: Greatly improved by late fall rains.

NEW JERSEY.—*Burlington*: Late plantings seriously injured by drought; severe ravages of Colorado beetles. *Morris*: No rot. *Warren*: Short but good.

PENNSYLVANIA.—*Lancaster*: Late plantings suffered from drought and bugs. *Westmoreland*: Badly injured by drought and Colorado beetles. *Fayette*: Colorado beetles troublesome. *Bedford*: Colorado beetles injurious, but the quality of the crop good. *Bucks*: Late Rose did well. *Lawrence*: Short but good. *Dauphin*: Colorado beetles very destructive. *Clearfield*: Colorado beetles destructive. *Washington*: Poorest yield for years.

DELAWARE.—*Kent*: Short but of good quality.

MARYLAND.—*Prince George*: Short but good. *Washington*: Short. *Queen Anne*: Shortened by drought. *Howard*: Short and poor. *Harford*: Shortened by Colorado beetles. *Baltimore*: Shortened by drought and bugs. *Montgomery*: Shortened by drought and bugs. *Anne Arundel*: Nearly destroyed by drought and bugs.

VIRGINIA.—*Mecklenburgh*: Almost an entire failure. *Highland*: Better than usual in spite of Colorado beetles. *Augusta*: Some of the finest tubers ever raised in the county. *Page*: Colorado beetles. *Henrico*: Drought. *Clarke*: The only tolerable crops were those planted after June 20; some damage from Colorado beetles. *Bedford*: Drought. *Essex*: Early plantings failed; late ones are very fine. *Craig*: Good and cheap. *Buchanan*: Drought and rot. *Fluvanna*: All short except the "Lake-Shore" variety. *Spottsylvania*: Crop large and fine. *Frederick*: Colorado beetles injurious. *Rappahannock*: Drought.

NORTH CAROLINA.—*Granville*: Poorest crop for years. *Wilkes*: Injured by drought and late frosts. *Haywood*: Drought injured early plantings; Campbell's Late Rose very productive. *Mitchell*: Rot. *Burke*: Drought. *Alexandria*: A failure. *Person*: A complete failure. *Beaufort*: Drought.

GEORGIA.—*Wilkes*: Very fine. *Terrell*: Drought.

ALABAMA.—*Covington*: Good and sound, but small. *Blount*: Drought.



MISSISSIPPI.—*Jefferson*: Almost a failure.

LOUISIANA.—*Franklin*: Shortened by drought.

TEXAS.—*Austin*: Second crop very good, especially Early Rose. *Fayette*: Yielded well and kept well. *Scott*: Drought.

ARKANSAS.—*Washington*: Drought. *Fulton*: Early plantings did well; late, shortened by drought. *Columbia*: Early Rose did well.

TENNESSEE.—*Hancock*: Abundant and fine. *Dyer*: A failure. *Monroe*: Early plantings a failure; later somewhat better. *Hardin*: Drought. *James*: Short. *Sequatchie*: Early plantings ruined by drought. *Knox*: Drought. *Greene*: Short. *Lincoln*: Drought.

WEST VIRGINIA.—*Tyler*: Drought. *Ritchie*: Early plantings injured by insects; late ones good. *Marion*: Small but sound. *Mercer*: Very good. *Kanawha*: Short. *Jefferson*: Colorado beetles. *Hancock*: Drought and bugs. *Harrison*: Bugs and drought. *Hardy*: A failure except where Paris green was used. *Doddridge*: Drought. *Brooke*: Better than last year; Colorado beetles destroyed by picking, and Paris green. *Boone*: Early crops light; later ones good. *Berkeley*: Early plantings swept by the bugs; later plantings escaped.

KENTUCKY.—*Scott*: Drought and bugs. *Nicholas*: Colorado beetles. *Lincoln*: Late plantings good; early scarce returned the seed. *Harrison*: Very poor. *Hart*: Very poor; drought. *Gallatin*: Half average, and of inferior quality. *Boyle*: Ruined by drought and bugs.

OHIO.—*Pike*: Drought. *Belmont*: Very inferior; bugs and drought. *Crawford*: Tolerable; injured by drought and bugs. *Champaign*: Drought and bugs. *Delaware*: A failure, except in moist low lands. *Lawrence*: Extrordinarily good. *Lorain*: good in spite of bugs. *Lucas*: Light, but good quality. *Morrow*: Closing season fine. *Mercer*: Sound. *Montgomery*: Early plantings good; late did not mature.

MICHIGAN.—*Branch*: Crops on oak openings scarcely worth digging. *Lake*: Abundant and good. *Macomb*: Drought. *Calhoun*: Early injured by drought; Paris green effectually used against the bugs. *Newaygo*: Good crops of peachblows since September 1; early kinds no better than last year. *Oakland*: Drought and bugs. *Ottawa*: Drought and bugs. *Grand Traverse*: Colorado beetle injurious. *Houghton*: Rot in some localities; skin appears sound, but when taken in hand it feels like a bag of water. *Ingham*: Drought. *Lapeer*: Bugs.

INDIANA.—*Whitley*: Seldom better. *Switzerland*: Drought. *Dubois*: Unusually small; drought. *Franklin*: Short and scarce; \$1 per bushel. *Fulton*: Colorado beetles not so bad as formerly. *Gibson*: Shortened by rain. *Howard*: Largest crop ever raised. *Noble*: Scarce; severe drought. *Posey*: Late crops good; in the beech hills the yield is 100 bushels per acre. *Pike*: Late plantings improved. *Steuben*: Good in timber lands; a failure in sandy and gravelly soils; 50 to 60 cents per bushel.

ILLINOIS.—*Mason*: A few late crops are good. *Sangamon*: Very poor; drought and bugs. *Winnebago*: No frost to injure vines. *White*: Bugs. *Shelby*: Late rains have greatly improved the crops. *Saint Clair*: Remarkably good. *Pike*: Good what there is of them. *Pope*: Injured 30 per cent. by drought. *Ogle*: Drought and bugs. *Montgomery*: Late potatoes fine. *Massac*: Late plantings better than for several years. *Macon*: Very fair crops, especially when early planted. *Hancock*: Good and well secured. *Fulton*: Late fine weather has made the crops. *Fayette*: Have grown rapidly since late rains. *Clinton*: Crops covered with straw took a second growth, and gave us a splendid yield after the bugs left. *Champaign*: Bugs and drought. *Carroll*: Late potatoes good; 40 cents per bushel. *Henry*: Poor quality; not well ripened. *Boone*: Struck by frost; many unsound ones. *Henderson*: Late crops good; early ones poor.

WISCONSIN.—*Walworth*: Better than for years. *Trempealeau*: Better crop than last year; better season, and an effective use of Paris green. *Saint Croix*: Drought and Colorado beetles. *Cheboygan*: Good season. *Sauk*: Late potatoes greatly improved. *Iowa*: Never better. *Columbia*: Some bugs. *Chippewa*: Potato bugs abundant. *Adams*: Good. *Jackson*: Bugs not so bad as last year.

MINNESOTA.—*Chisago*: Badly rotten. *Isanti*: Good in spite of drought and bugs; early plantings more practiced than formerly. *Martin*: Brought out by rains after the grasshoppers left. *Sherburne*: Double last year's yield and of fine quality. *Stearns*: Reduced by beetles. *Sibley*: Injured by grasshoppers to some extent. *Swift*: Drought. *Todd*: Some rot in the cellar. *Wright*: Bugs.

IOWA.—*Page*: Shortened by drought. *Montgomery*: Early Rose a fair average; peachblows a failure. *Marion*: Crop made within six weeks. *Lee*: Grew too rapidly to be as good as usual in quality; ready sale at 50 and 60 cents per bushel. *Jones*: Crop made by the August rains. *Jackson*: Abundant and good. *Harrison*: Failed through insects and drought. *Henry*: Early crop almost a failure. *Delaware*: Very fine. *Dallas*: Colorado beetles injurious. *Buena Vista*: Greatest failure ever known. *Benton*: Late crops fine.

MISSOURI.—*Penisoot*: Both early and late crops an entire failure through drought. *Chariton*: Late varieties failed. *Platte*: Scarce; \$1.20 per bushel. *Perry*: Shipping

potatoes from Saint Louis for our home consumption. *Johnson*: Almost destroyed by drought and chinchies. *Jasper*: Early crops good; late ones failed. *Franklin*: Scarce. *Daviess*: Early crops good; late ones failed. *Cole*: Drought. *Clinton*: Early crops good; late ones failed.

KANSAS.—*Marion*: Early crops light; later ones not worth digging. *McPherson*: Early crops average; late, a failure; drought. *Miami*: Late crops injured by drought; quality fair. *Labette*: Shortened by drought. *Montgomery*: A failure; grasshoppers and drought. *Jackson*: Early Rose did well; late plantings poor. *Bourbon*: Early Rose good; late varieties failed. *Mitchell*: No late potatoes; early, half a crop.

NEBRASKA.—*Lincoln*: Destroyed by bugs. *Antelope*: Early Rose good; late varieties failed, except the Harrison; grasshoppers. *Webster*: Drought.

OREGON.—*Columbia*: Blight decreasing.

## BUCKWHEAT.

Our returns indicate an increase in this crop over last year in the New England States; Delaware, Virginia, North Carolina, Tennessee, West Virginia, Indiana, Illinois, Wisconsin, Minnesota, Iowa, and Oregon, equal last year's crop; New York, the largest buckwheat State, is but one per cent. below last year; Pennsylvania, the next in production, declines six per cent. These two States produce nearly two-thirds of the entire crop. Other large-producing States come short of last year's yield.

NEW YORK.—*Warren*: Straw thin and short, but heads well filled with fine grain.

PENNSYLVANIA.—*Lycoming*: Straw large and well loaded. *Dauphin*: Two or three days of extreme heat at blooming-time reduced the yield one-half.

MARYLAND.—*Howard*: Filled poorly.

VIRGINIA.—*Highland*: Abundant; "silver hull," from the Department, a great improvement. *Henrico*: Brought up finely by August rains.

NORTH CAROLINA.—*Haywood*: Fine yield and quality. *Mitchell*: Very good. *Ashe*: Shortened by drought.

TENNESSEE.—*Greene*: Silver hull grows small, but fills well.

WEST VIRGINIA.—Poor; long drought. *Mercer*: Excellent. *Hardy*: Drought.

OHIO.—*Pike*: Injured by drought.

MICHIGAN.—*Bay*: A quart of seed from the Department returned two bushels and nine quarts of splendid grain. *Lake*: Never finer.

INDIANA.—*Wabash*: Good.

WISCONSIN.—*Columbia*: Silver hull has done well; better than last year. *Adams*: Acreage doubled and product per acre increased fifty per cent.

IOWA.—*Harrison*: Acreage doubled.

MISSOURI.—*Taney*: Almost a failure; drought from July 1 to September 15.

KANSAS.—*Nemaha*: Entirely lost.

NEBRASKA.—*Pawnee*: Destroyed by grasshoppers.

## HAY.

The hay-crop of the whole country is about the same as last year. In all the New England States, except Maine, there was an increased yield, and in all of them an improved quality. In some parts of Maine an increase of swale hay is noted. In Berkshire, Massachusetts, it is stated that, though the crop is clean and nice, it is less nutritious than last year. In the Middle States, except Pennsylvania, the yield is largely increased, and nearly all the counties report an improvement in quality. Of the South Atlantic States, Maryland, and Virginia show a smaller yield, but without any appreciable decline in quality. North Carolina and South Carolina equal or exceed last year's crop, with a considerable improvement. In the latter state peavine hay is cured in increasing quantities. Georgia, through drought, loses 10 per cent., but maintains her standard of quality. Alabama loses 10 per cent. but the other Gulf States fully equal last year's yield, Texas showing an increase of 13 per cent. In quality, these States show a decline of about 3 per cent. Drought, so injurious to other

crops of the inland Southern States, has been felt severely by the hay-farmers. Arkansas declines 26 per cent.; Tennessee, 25 per cent.; West Virginia, 22 per cent., and Kentucky, 38 per cent. from last year's crop, while all show a very serious decline in quality. German millet is a successful crop in Tennessee. All the States north of the Ohio show declining yields, but nearly or quite maintain the quality of the crop. West of the Mississippi, Iowa alone equals her last year's crop. The quality is maintained, except in Kansas and Nebraska. The Pacific coast raised a superior crop, equal to last year's in Oregon and one-third greater in California. In Kern County of the latter State, alfalfa has yielded five cuttings since May, besides leaving a fine pasture.

MAINE.—*Cumberland*: Winter-killed to some extent. *Oxford*: More swale hay than usual; cured well. *Piscataquis*: Considerably winter-killed where not protected by snow.

NEW HAMPSHIRE.—*Hillsborough*: Hay abundant and fine. *Carroll*: Fully up to last year.

VERMONT.—*Rutland*: Hay-crop excellent. *Caledonia*: Hay of excellent quality. *Chittenden*: Fall-feed fine; no hay used yet. *Windham*: Best second crop of hay for many years.

MASSACHUSETTS.—*Berkshire*: Clean and nice, but appears to be less nutritious than last year. *Bristol*: Quality reduced by unfavorable curing weather.

RHODE ISLAND.—*Washington*: Crop heavy.

CONNECTICUT.—*New London*: Hay-crop larger and finer than last year.

NEW YORK.—*Richmond*: Crop large and well secured. *Seneca*: Hay well secured. *Fulton*: Large crop of hay. *Wayne*: Crop large and good. *Warren*: Quality depreciated through the unusual growth of weeds. *Sullivan*: Hay abundant and fine. *Wyoming*: Feed abundant.

NEW JERSEY.—*Burlington*: No second hay-crop cut. *Sussex*: Finely cured and harvested. *Warren*: Crop fine, and well secured.

PENNSYLVANIA.—*Lancaster*: Season fine for growth and harvesting of hay. *Butler*: Fall pastures good, putting cattle in fine order for winter. *Montgomery*: Shortened by drought; good quality. *Fayette*: Light, but good. *Cambria*: Good and well matured; sells for \$25 per ton. *Lawrence*: Short, but good. *Beaver*: Stock cannot be wintered on the hay harvested. *Lycoming*: Clover short and timothy thin. *Washington*: Hay scarce, but fine; pasture gone, and stock must be fed early.

DELAWARE.—*Kent*: Heavy and clean hay-crop.

MARYLAND.—*Wicomico*: Hay a new crop here; culture increasing, and more profitable. *Howard*: Fine hay-crop. *Baltimore*: All kinds well secured. *Caroline*: Well saved.

VIRGINIA.—*Charles City*: Shortened by drought. *Highland*: Hay-crop light through drought. *Henrico*: Fine growing and harvesting weather. *Gloucester*: Shortened by drought. *Bedford*: No hay saved in many parts of the county; farmers depend on corn-fodder. *Madison*: Hay of good quality. *Craig*: Shortened by summer drought.

NORTH CAROLINA.—*Ashe*: Grass-crops shortened by drought. *Mitchell*: Hay improved in quality. *Buncombe*: About equal to last year. *Chowan*: Quality of hay very good. *Beaufort*: Increased acreage in grass.

SOUTH CAROLINA.—*Marlborough*: An unusual quantity of pea-vine hay secured. *Chesterfield*: Hay-crop shortened by freshets.

GEORGIA.—*Jefferson*: Hay-crop good. *Carroll*: Shortened by drought.

LOUISIANA.—*Tensas*: Immense yield of grass, which was secured in fine condition.

TEXAS.—*Austin*: Artificial and crab grass a failure; prairie-hay abundant, and cut in large quantities. *San Saba*: Good. *Fayette*: Short. *Medina*: Pastures excellent. *Uvalde*: Pastures fine. *De Witt*: Hay abundant and fine. *Bosque*: Alsike and blue grass stood the drought well.

ARKANSAS.—*Scott*: Army-worms destroyed red-top and timothy in many localities.

TENNESSEE.—*Obion*: Hay very good. *Dickson*: Standard grasses generally a failure, but German millet did well; army-worms about. *Wilson*: Shortened by drought. *Blount*: Shortened by drought. *Knox*: Great difficulty in getting a stand of clover or timothy. *Greene*: Shortened by drought. *Grundy*: German millet an extraordinary growth. *Lawrence*: German millet excellent. *Lincoln*: Drought.

WEST VIRGINIA.—*Wood*: Pastures very short. *Mercer*: Hay light, but well cured and good. *Kanawha*: Half crop of hay. *Jefferson*: Very good crop. *Hancock*: Shortened by drought. *Harrison*: Hay-crop short. *Hardy*: Drought. *Brooke*: Timothy poor; clover good, especially the second crop.

KENTUCKY.—*Lewis*: Short crop; brings \$22 per ton. *Ohio*: Drought and worms. *Mercer*: Pasture excellent. *Lincoln*: Hay-crop light. *Lare*: Shortened by summer



drought. *Jessamine*: A third of a timothy crop; drought; clover nearly average. *Daviess*: Pastures short.

OHIO.—*Vinton*: Hay-crop short; pastures burned up. *Crawford*: Hay short. *Champaign*: Hay half short; grass nearly gone. *Delaware*: Greatly shortened by drought. *Erie*: Grass very short; cattle suffering for water. *Harrison*: Pasture gone. *Lawrence*: Half a hay-crop. *Lorain*: Pastures green and good. *Morgan*: Hay short. *Morrow*: Fine in quantity and quality. *Meigs*: Pastures dried up. *Montgomery*: Hay shortened by drought. *Perry*: Pastures nearly dried up; water for stock scarcer than ever known.

MICHIGAN.—*Marquette*: Pasture improved. *Branch*: Poorest hay-crop ever raised. *Livingston*: Fall feed used up by drought. *Macomb*: Drought. *Newaygo*: Hay short, but good. *Oakland*: Quality good; shortened by drought. *Saginaw*: Hay light, but fine; millet sown in considerable quantities, which, through careful curing, turned out well. *Lapeer*: Good. *Lenawee*: Shortened by drought.

INDIANA.—*Lake*: Hay-crop very good. *Grant*: Pasture short. *Warren*: No fall pasture. *Franklin*: Very little for sale. *Howard*: Hay deficient in quality and quantity; drought; stock-water failing. *Lawrence*: Extreme drought; stock-water scarce. *Orange*: Pastures very short; hay scarce; \$20 per ton, against \$10 last year. *Posey*: Hay very short.

ILLINOIS.—*Sangamon*: Extra good when put up, but many stacks injured by weather. *Richland*: Many meadows cut a second time, the second crop being about half average. *Pope*: Shortened by drought in June. *Piatt*: Pastures short. *Macon*: Better than for years. *Hancock*: Increased attention to hay and grasses. *Fayette*: Short hay-crop; drought; pastures fine. *Carroll*: Timothy \$10 per ton.

WISCONSIN.—*Lafayette*: Hay injured by floods. *Saint Croix*: Shortened by drought. *Richland*: Short; drought. *Ozaukee*: Pastures better than for years. *Fond-du-Lac*: Hay product increased by the use of gypsum. *Chippewa*: Drought. *Adams*: Light, but good.

MINNESOTA.—*Stearns*: Fine harvest weather. *Steele*: Hay never better.

IOWA.—*Wayne*: Hay light, but fall pastures fine. *Pottawattamie*: Light grass-crop, requiring the curing of an extra amount of prairie-grass. *Marion*: Improved quantity and quality. *Lee*: Fall pasture excellent. *Jones*: Drought. *Hardie*: Tame grasses light. *Johnson*: Pasture unusually fine. *Henry*: A good crop of hay, but injured to a considerable extent in the stack. *Floyd*: Hay still lighter than last year. *Clinton*: Fall feed good.

MISSOURI.—*Putnam*: Pasture fine. *Johnson*: Hay-crop made before the drought became severe. *Daviess*: Hay-crop escaped the drought. *Clinton*: Fine harvest-weather. *Adair*: Hay-crop 10 per cent. greater than ever before; it will be the main crop hereafter; thousands of acres have been sown this fall.

KANSAS.—*Marshall*: The few packages of grass-seed received from the Department have, by their results, convinced our farmers that it would be a great advantage to supersede our wild grasses with cultivated ones. *Marion*: Never knew hay to spoil so much after being stacked. *Miami*: Prairies all mowed over. *Labette*: Good, considering the drought. *Montgomery*: Hay-crop large and fine. *Jackson*: More hay in stack than ever before. *Bourbon*: Unprecedented hay-crop. *Barton*: The destruction of the corn by grasshoppers caused the farmers to give special effort to securing hay, of which there is abundance for stock-feed. *Mitchell*: Hay short and injured by rain in the stack.

NEBRASKA.—*Lincoln*: Hay-crop short, but good. *Antelope*: Large quantities secured, but injured in the stack by rains. *Webster*: Hay plenty and good.

CALIFORNIA.—*Placer*: Hay-crop superior in quantity and quality. *Mendocino*: Larger hay-crop than usual. *Kern*: Farmers have just finished cutting their alfalfa-hay crop, having cut four or five times since May; fine pasture.

OREGON.—*Columbia*: Hay never better; good timothy \$4 and \$5 per ton in the field pasturage good all season.

## TOBACCO.

The depressed yield of tobacco was sufficiently foreshadowed in our previous monthly reports. All the large tobacco States show results indicating a disastrous year to this productive interest. From Missouri comes the report of a new enemy to this crop, the chinch-bug. A final report of the crop of 1874 will be made after the receipt of special returns from all the principal tobacco-growing counties, including more particular and complete information which may modify in some cases the State percentages of yield published in the accompanying tables.

## CONDITION OF WINTER-WHEAT.

The following notes from our December returns show some of the local aspects of the growing crops:

VERMONT.—*Grand Isle*: In good condition. *Addison*: Not over 52 per cent. of last year's acreage sown. *Rutland*: Has not come forward.

NEW YORK.—*Steuben*: Remarkably promising. *Yates*: As fine a growth as ever known here.

NEW JERSEY.—*Burlington*: Winter-wheat under average, but improved by late rains. *Morris*: Wheat remarkably good.

PENNSYLVANIA.—*Clinton*: Wheat looks well; the Hessian fly has done some damage, but the plant is strong enough to resist the severity of winter as well as the ravages of the insect. *York*: Wheat looks sickly in places, but late rains will bring it out. *Cambria*: Weather favorable for putting in fall crops. *Lancaster*: Looks poorly; will be very short without abundance of snow. *Perry*: Acreage of winter-wheat increased by the failure of young clover. *Indiana*: Wheat and rye look remarkably well; the fall has been all that could be desired. *Tioga*: Specimens of rye from the Department have succeeded so well that the farmers are encouraged to revive this branch of culture, which had nearly ceased. *Beaver*: Drought. *Sullivan*: Best prospect for years. *Green*: Growing wheat good; abundant rains.

MARYLAND.—*Caroline*: Injured by drought; no rain from September 16 to November 23. *Dorchester*: Looks well in spite of drought. *Harford*: Injured by extreme drought; it is feared that the grain is too poorly rooted to stand the winter. *Wicomico*: Recent rains have improved its hitherto unpromising appearance. *Washington*: Wheat improved by late rains. *Baltimore*: Wheat sown late to avoid the fly; drought has injured its growth. More attention is given to rye; it brings nearly as high prices as wheat, requires less manure, and produces a more valuable straw. *Calvert*: Injured by drought. *Howard*: Small growth; drought. *Saint Mary's*: Injured by drought; fly destructive.

VIRGINIA.—*Cumberland*: Extreme drought has prevented the wheat from coming up freely. *Warwick*: Not moisture enough to enable the grain to germinate. *Stafford*: Injured by drought. *King George*: Drought. *Campbell*: Late sown, and hence backward. *Prince William*: Wheat and rye seeded late and in a slovenly way through lack of moisture. Late-seeded grain has come up thin; drilled grain the best. *Russell*: Wheat looks 15 per cent. worse than last year. *Warren*: Dry season. *Amelia*: Severe drought; wheat seems very thin, especially where shallow implements are used, such as "cultivators." *Gloucester*: Wheat looks poorly, on account of drought and drying winds. *Elizabeth City*: Extremely dry. *Caroline*: Unusually dry. *Westmoreland*: Drought. *Page*: Better cultivation makes the growing crops look better; an unusual application of fertilizers has been made. *Nelson*: Thin; ground too dry. *Mecklenburg*: Wheat looks badly; drought. *Madison*: Drought; broadcast-wheat thin; drilled looks better; drills coming into general use. *Dinwiddie*: Drought. *Fluvanna*: Wheat backward. *Highland*: Wheat looks well. *Roanoke*: Wheat looks remarkably well. *Loudon*: Wheat looks well.

NORTH CAROLINA.—*Wilkes*: Most favorable sowing-season ever known here.

GEORGIA.—*Lumpkin*: Wheat prospect flattering. *Appling*: Wheat backward; drought.

TEXAS.—*Marion*: Prospects gloomy for winter-grain. *McLennan*: Largely increased wheat-acreage.

ARKANSAS.—*Van Buren*: Wheat sown too early. *Franklin*: Very promising. *Independence*: About 10,000 acres of wheat sown; many crops injured by the fly.

TENNESSEE.—*Lawrence*: More grain sown than ever, and more pains in its preparation. *Warren*: Fall fine for winter-grain. *Bradley*: Fly in early-sown wheat. *Carter*: Early-sown wheat looks fine. *Cannon*: Soil put in better condition than last year. *Greene*: Looks well, what has come up.

WEST VIRGINIA.—Wheat thin through drought. *Putnam*: Drought. *Raleigh*: Wheat looks well. *Cahill*: Wheat very poor. *Mercer*: Injured by drought. *Nicholas*: Wheat looks well.

KENTUCKY.—*Hardin*: Looks finer than ever. *Jessamine*: Acres in wheat, 14,250. *Mason*: Wheat small but healthy. *Henry*: All sorts exceedingly fine. *Ohio*: Very favorable season. *Owsley*: Wheat looks poor; late sown on account of drought. *Gallatin*: Improved by late rains.

OHIO.—*Monroe*: Largest wheat-acreage sown in fifteen years. *Ross*: Looks well in spite of drought. *Lucas*: Looks very badly; drought; drilled wheat better. *Hamilton*: Late drought prevented plowing for fall-grain and decreased the acreage. *Fairfield*: Wheat not tillering as much as usual; drought. *Coshocton*: Nearly 30,000 acres in wheat; great increase in consequence of loss of clover-crops. *Van Wert*: Wheat sown after the middle of September was greatly retarded by drought. *Tuscarawas*: Wheat looks remarkably well. *Union*: Some damage from the fly.

MICHIGAN.—*Monroe*: Many fields as bare as the roads. *Charlevoix*: Tendency towards spring-wheat. *Grand Traverse*: Average in spite of the fly. *Lenaawee*: Has not come up well; drought. *Wayne*: Greatest drought in forty-nine years; not half the wheat on the clay hills came up. *Cass*: Wheat has made an unusual growth; fly in some pieces. *Hillsdale*: Wheat looks well. *Livingstone*: Did not come up well on clay soils. *Montcalm*: Never looked better. *Barry*: Slim through drought.

INDIANA.—*Dearborn*: Drought restricted the wheat acreage. *Dubois*: Looks well in spite of drought. *Fayette*: Drought. *Gibson*: Wheat looks fine; some fields a perfect mat of dark green. *Noble*: Injured by drought. *Morgan*: Wheat fine. *Brown*: Acreage of wheat restricted by drought. *Perry*: Looks well in spite of drought. *Howard*: Injured by droughts on clay soils. *Tipton*: Wheat looks well. *Jennings*: What little wheat was sown looks badly; drought. *Warren*: Wheat never looked better. *Cass*: Came up well; fine rains wetting the ground six inches deep. *Marion*: Low prices have discouraged sowing, consequently the acreage has been reduced. *Martin*: Acreage restricted by drought.

ILLINOIS.—*Marion*: Acreage enlarged; crop looks well. *Pike*: Never looked better. *Johnson*: Increased use of the drill in wheat-seeding. *Marion*: Snow threatens to smother some fields of wheat. *Champaign*: Wheat injured by drought. *Fulton*: Wheat looks unusually well; increased acreage. *Jersey*: Wheat never better. *Pope*: Retarded by fall drought. *White*: Wheat acreage increased 50 per cent. *Hancock*: Never looked so well. *Logan*: Wheat prospect never finer. *McLean*: Very fine in spite of drought. *Shelby*: Wheat more promising than for twelve years.

WISCONSIN.—*Sauk*: About 5,000 acres of winter-wheat sown. *Waupaca*: Wheat never looked better; acreage greater than ever before. *Walworth*: A hard year for farmers.

MINNESOTA.—*Isanti*: Fine weather has caused the grain to stool out well; it is now well covered with snow.

MISSOURI.—*Ripley*: Acreage in wheat at least two and a half times greater than in any former year. *Texas*: Double the acreage of last year; sown mostly in September, and looks better than for ten years past; fly in some places. *Caldwell*: Wheat looks extremely well. *Adair*: The best prospect for wheat. *Franklin*: Early-sown wheat looks better than last year. *Montgomery*: Wheat covered with 15 inches of snow. *Phelps*: Putting in our wheat better than ever; more drilling.

KANSAS.—*Coffee*: Wheat sown in September never looked better; later sowings in danger of freezing out. *Clay*: Early-sown wheat looks well; late broadcast wheat injured by drought; no rain since September 15. *Leavenworth*: Late rains and a heavy snow protect the wheat from winter-killing. *Labelle*: Looks promising considering the late sowing. *Shawnee*: Never better.

NEBRASKA.—*Cass*: Timely rains have given our grain a good start.



Table showing the condition of the crops, &amp;c., on the 1st day of November, 1874.

States.	CORN.		POTATOES (Solanum tuberosum.)		POTATOES (Batatas edulis) SWEET.		TOBACCO.		HAY.		BEANS.
	Products compared with last year.	Average quality compared with last year.	Product compared with last year.	Average quality compared with last year.	Product compared with last year.	Average quality compared with last year.	Product compared with last year.	Average quality compared with last year.	Product compared with last year.	Average quality compared with last year.	
Maine.....	95	87	95	97	.....	.....	.....	.....	94	102	106
New Hampshire.....	95	100	95	93	.....	.....	.....	.....	106	100	97
Vermont.....	95	101	94	95	.....	.....	74	81	109	104	92
Massachusetts.....	99	92	101	101	.....	118	60	118	128	97	99
Rhode Island.....	94	100	100	103	.....	.....	.....	.....	125	100	105
Connecticut.....	110	104	120	96	.....	111	75	111	129	115	112
New York.....	95	102	102	101	.....	102	88	102	126	103	101
New Jersey.....	90	101	82	102	96	96	.....	.....	125	105	97
Pennsylvania.....	97	101	87	97	96	100	73	97	125	103	101
Delaware.....	94	90	105	100	110	100	.....	.....	133	100	100
Maryland.....	96	98	66	91	86	98	73	83	125	98	94
Virginia.....	99	99	86	95	97	99	58	90	92	100	101
North Carolina.....	102	101	76	85	95	97	54	88	111	103	98
South Carolina.....	117	101	104	102	109	104	.....	.....	100	109	101
Georgia.....	108	105	79	97	101	89	100	94	90	102	102
Florida.....	100	98	.....	.....	102	101	.....	.....	.....	.....	92
Alabama.....	91	95	80	84	76	85	83	97	90	97	83
Mississippi.....	100	95	62	85	69	79	95	90	100	101	81
Louisiana.....	81	89	77	87	72	82	.....	.....	100	97	.....
Texas.....	103	110	94	96	87	92	100	103	113	98	91
Arkansas.....	50	69	49	60	65	74	75	74	81	88	54
Missouri.....	65	81	50	70	87	93	100	90	75	96	88
Tennessee.....	88	95	71	96	90	97	57	89	78	96	93
West Virginia.....	80	87	55	69	93	86	24	75	62	86	76
Kentucky.....	100	103	91	97	89	99	41	77	77	101	96
Ohio.....	86	100	91	99	80	113	103	108	83	102	96
Indiana.....	94	100	83	96	98	102	42	94	96	100	106
Illinois.....	81	92	106	94	102	99	62	94	95	100	87
Wisconsin.....	92	102	110	103	.....	.....	95	102	77	98	97
Minnesota.....	96	102	85	101	.....	.....	.....	.....	92	100	92
Iowa.....	110	104	135	107	.....	.....	.....	.....	100	98	99
Missouri.....	65	77	67	80	109	100	55	89	100	101	78
Kansas.....	43	62	45	76	80	92	.....	.....	98	98	81
Nebraska.....	50	64	72	80	59	94	.....	.....	94	82	30
California.....	101	101	91	101	111	100	.....	.....	134	93	36
Oregon.....	100	96	104	103	.....	.....	103	105	100	104	99
							100	102	100	100	108

*Yield of the crops, &c., on the first day of November, 1874—Continued.*

States.	PEASE.		BUCK- WHEAT.		FLAX.	COTTON.		SORGHUM.	SUGAR- CANE, (not sorghum.)	GRAPES.	APPLES.	PEARS.
	Product com- pared with last year.	Product com- pared with last year.	Product com- pared with last year.	Product com- pared with last year.	Product com- pared with last year.	Indicated prod- uct compared with last year.	Indicated prod- uct (lb) per acre, in pounds.					
Maine.....	101		107							Product com- pared with an average crop.	Product com- pared with an average crop.	Product com- pared with an average crop.
New Hampshire.....	97		112							94	94	102
Vermont.....	90		102							99	86	104
Massachusetts.....	98		113							97	46	92
Rhode Island.....										101	107	85
Connecticut.....	103		107							93	143	114
New York.....	97		99							122	146	112
New Jersey.....	100		93							108	112	93
Pennsylvania.....	99		94		97					102	121	97
Delaware.....			100							111	102	97
Maryland.....	88		87							90	120	80
Virginia.....	96		100		87	89	163	91		100	84	71
North Carolina.....	96		100		96	89	172	97		97	46	48
South Carolina.....	103					92	194	102		91	60	66
Georgia.....	103					93	136	95		101	101	77
Florida.....	89					100	100		94	85	80	73
Alabama.....	79					93	129	114	99	96		
Mississippi.....	80					93	139	103	113	89	78	61
Louisiana.....	102					85	173		97	91	72	61
Texas.....	84					90	170	92	115	65	71	56
Arkansas.....	70					60	108		108	101	103	91
Tennessee.....	87		103		91	57	143	102	89	96	76	74
West Virginia.....	90		109		88			75		88	88	79
Kentucky.....	83		86		66			93		103	88	89
Ohio.....	97		94		79			90		113	86	92
Michigan.....	94		79					87		115	91	91
Indiana.....	97		112		104			82		109	83	93
Illinois.....	87		103		92	107		107		108	88	92
Wisconsin.....	95		103		103	94		94		109	80	81
Minnesota.....	104		100		100	81		104		96	83	66
Iowa.....	101		107		122	106		106		107	102	
Missouri.....	82		78			69	273	76		114	114	
Kansas.....	54				113			54		98	84	91
Nebraska.....	43							76		92	86	93
California.....	94									130	75	
Oregon.....	100		114		116					100	108	109
											126	104



## EXTRACTS FROM CORRESPONDENCE.

## FROM NOVEMBER RETURNS.

**AGRICULTURAL PROSPECTS.**—*Greene, Ala :* There seems to be a disposition toward fall plowing ; the negroes seem to be anxious to get to work at it. If we can manage to do the greater part of the heavy work now, instead of waiting till spring, to overtax our mules, it will be a great point gained.

*Lowndes, Miss. :* Short cotton-crops and low prices have produced great stringency. Ordinary brings but 13 cents per pound ; it costs 15 cents per pound, with an average of 150 pounds of lint per acre.

*Jackson, Ark. :* Our planters are very much discouraged ; many of them have not made enough cotton to run them another year, and not half enough corn. Fortunately we have a good mast to fatten our hogs, or we should be without pork, and no money to buy with.

*Montgomery, Tenn. :* The coming winter stands a horror before the farmers ; corn and hay very short.

*Dyer, Tenn. :* Very short corn-crop, and scarcity of hogs will make meat scarce this winter.

*Livingston, Ill. :* It is a most singular fact that our seasons have become more dry for the last five years. We expect much destitution and suffering here this winter from the failure of crops.

*Grundy, Ill. :* The longest and most severe drought ever known here, from June 20 ; streams all dry.

*Franklin, Ill. :* The great question with our farmers now is, how we can destroy the chinch-bugs, for they must be destroyed or we must stop growing corn until they leave. We are agitating the propriety of burning all over our timber and all other land, so far as it can be done.

*Douglass, Wis. :* Farmers only hold their own. Nearness of copper and silver mines causes some neglect of farms.

*Mille Lacs, Minn. :* Stringency in the money-market affects the lumbermen, but the farming community are well prepared for the winter.

*Pope, Minn. :* The farmers do not appear to be discouraged on account of the short crops, but have manfully proceeded to prepare for a crop next year.

*Van Buren, Iowa :* In a residence of thirty-one years I have never known a season of so great abundance in the State. There is no general failure of the ordinary farm-products, except, probably, a small corner of the northwest portion of the State, where the grasshoppers have eaten a portion of the great abundance.

*Lee, Iowa :* Our county has been highly favored this year ; splendid corn, potato, and fruit crops find a ready market at good prices ; excellent fall pasturage.

*Benton, Mo. :* Drought still continues ; no rain since May ; no such dearth within the recollection of the oldest inhabitant.

*Taney, Mo. :* Drought from July 1 to September 15.

*Ray, Mo. :* Unparalleled drought.

*Ralls, Mo. :* Our season has been one of unparalleled fruitfulness, and our farming population are in a position to appreciate it, since our neighboring counties have suffered such terrible devastations this year. Last year was a poor season, and not much was raised ; the reverse is true this year.

*Moniteau, Mo.:* Our prospects are gloomy indeed ; our splendid wheat-crop is all we have to depend on.

*Jasper, Mo.:* No rain for four months.

*Crawford, Mo.:* Poorest crop-year ever known in the county.

*Cowley, Kans.:* Times hard ; money monopolies using all the advantage that the grasshopper, chinchies, and severe drought will give them.

*Sedgwick, Kans.:* We are not in as destitute a condition as is supposed farther east. There are a few families that must have help ; the rest of us are in a poor condition to give this aid.

*Boone, Nebr.:* Grasshoppers destroyed all the corn, nearly all the oats, and garden vegetables, and injured the wheat.

*Merrick, Nebr.:* Grasshoppers numerous.

*Thayer, Nebr.:* Everything, except small grains, taken with drought, grasshoppers, and potato-bugs.

*San Joaquin, Cal.:* Notwithstanding San Joaquin County has raised about 1,600,000 centals of the finest wheat this year, the farmers, as a rule, are comparatively poor, owing to the heavy expense attending the harvesting and sacking of their wheat at the low price it brings. The grangers have loaded about twenty vessels with wheat on their own account, and the warehouses are full all over the State.

**FRUIT-CULTURE.**—*Monroe, N. Y.:* At Charlotte, the port of Rochester, the receipts of winter-apples average 5,000 barrels per day. The market price is about \$2 per barrel.

*Wicomico, Md.:* Cranberries have been planted here in considerable quantities during the last four years. Lack of knowledge of their proper treatment has delayed good yields. Experience indicates, in the future, a profitable growth.

*Ashe, N. C.:* Cranberries almost a failure ; cause unknown.

*Liberty, Ga.:* An enterprising lady, Mrs. R. Screven, planted some young pear-trees three years ago, and from their fruit this year shipped to Savannah fifteen barrels of Pound pears, retailing at 5 cents each. She has also successfully cultivated many thousands of tea-plants.

*Bandera, Tex.:* Peach-trees that bore a good crop this year commenced blooming again about October 12. Should the warm weather continue the trees will soon be in full bloom.

*Van Buren, Mich.:* Cranberries half a crop. Our fruit-crop will exceed in value our wheat-crop at present prices—95 cents to \$1 per bushel.

*Pulaski, Ill.:* I can only repeat with earnestness my former statements, that the blights of the roots and trunks of our apple-trees must soon make it impossible to grow apples in this locality unless remedies can be found for these diseases.

*Jackson, Mo.:* Some of our apple-trees have bloomed since the rains.

*Osage, Kans.:* There are some curious phenomena to be mentioned. The fruit-trees (stripped by the grasshoppers) have all relieved, and many of them have bloomed with double flowers. Most of the embryo fruit is double.

*San Joaquin, Cal.:* There will be hundreds of tons of the finest grapes left on the vines, there being no demand for them. Wine-makers are paying \$15 per ton, and very few buying at that price.

*Sonoma, Cal.:* No such a crop of grapes was ever before known in this county, where the grape attains the most perfect development and growth. Your correspondent harvested in his own vineyard eight tons of grapes per acre. Foreign grapes have also done well, though injured by frosts. The wine-product of the county, even at 30 cents per gallon, will be worth more than all the other products ; yet there is not more than one acre in grapes of a thousand suited to that culture.

*Butte, Cal.* : I have made about five tons of raisins this season from the grape called Muscat of Alexandria, or White Muscat, which is identical with that from which the Malaga raisins are made in Spain.

**CORN-CULTURE.**—*Orleans, Vt.* : During several years it has been the prevailing sentiment that it is cheaper to buy western corn than to raise it here.

*Plymouth, Mass.* : The farmers plant less grain every year ; one may ride several miles without seeing a single acre of Indian corn ; more attention to milk production, vegetables, and fruit.

**GRASS-CROPS.**—*Orleans, Vt.* : Hay is our principal crop, and is all stored in barns ; very few stacks in the county.

*Caldwell, N. C.* : Italian rye-grass wholly worthless here.

*Lincoln, N. C.* : The blue-grass has been taken in hand by one of our most enterprising farmers, but no one seems willing to try the Italian rye-grass for fear it may prove like some other foreign grasses, hard to eradicate.

**TOBACCO-CULTURE.**—*Person, N. C.* : The counties of Person, Granville, and Caswell are the finest tobacco-growing counties in the State. All other crops are much neglected or laid aside. The crop this year is one of the finest in color and quality.

**RICE-CULTURE.**—*Camden, Ga.* : This county has on the Saint Illa River 6,200 acres of rice-land under bank, all being under cultivation prior to 1861, and producing 279,000 bushels of rough rice, or 45 bushels per acre. In 1866 about 400 acres were planted, and the acreage has gradually increased from that time. The present year about 3,000 acres were planted, producing 120,000 bushels, or 40 bushels per acre.

**LIVE STOCK.**—*Montgomery, Va.* : This county is superior for grazing, which is a prominent occupation of the people. We have this year been eminently successful in this branch. Cattle were made very fat and sold at remunerative prices. Sheep-husbandry is on the increase, and the breeds of both cattle and sheep have been improved by importation.

*Montgomery, Iowa* : This county at the recent election adopted a regulation requiring stock of all kinds to be restrained from running at large, unless under the care and attention of some person, during the whole year.

*Polk, Mo.* : Farmers are selling all the stock they can get into selling condition. I expect to see more thin stock next spring than was ever seen in Polk County.

*Platte, Mo.* : Hogs a quick sale at \$5 per cental gross.

*Sedgwick, Kans.* : Those that have what farm-stock their homesteads can carry are, in this time of trial, in the best condition. Those that depended on grain alone, and would not be bothered with cattle, are in rather a bad fix.

**COTTON-CULTURE.**—*Edgefield, S. C.* : Last year a friend, with no little persuasion, induced me to plant a small portion of a very productive lot with seed of his raising, a variety known here as the Baucroft Cluster cotton, and the increased yield over the portion planted with common seed was truly wonderful, amounting to 20 per cent. These plants may be crowded very thickly, while the bolls, being in clusters, are easier to gather. It is said also to yield more lint from the same amount of gross cotton.

**PRODUCTS OF SOUTHERN TEXAS.**—*Cameron* : This section of Texas is not a farming country. Between the Nueces and Rio Grande—a ter-



ritory larger than the State of Pennsylvania—the people are almost exclusively engaged in stock-raising. There is a little cultivation along the margin of the Rio Grande, but it is very limited. In the whole valley there are not one hundred bales of cotton grown. The principal crops consist of corn, beans, melons, and a few vegetables. This is the dry region of Texas, and there will never be any agriculture until the waters of the Rio Grande are used for irrigation. This section consists of widely extended plains or prairies, with scarcity of water, but with good grass, and the plains are covered with cattle, horses, sheep, and goats. One gentleman in Nueces County, Mr. Mifflin Kennedy, has under fence 140,000 acres, and brands from 12,000 to 15,000 calves annually. Another, Captain King, has under fence about 60,000 acres and as much outside pasture, and he also brands annually 15,000 calves. Another stock-raiser, Mr. Clark, sold one of his brands and the stock with it, a few days since, for \$24,000 specie. These are the largest stock-raisers, but there are hundreds who count their herds by the thousands.

#### FROM DECEMBER RETURNS.

**AGRICULTURAL PROSPECTS.**—*York, Me.*: The opportunity for continuous farm labor has seldom been exceeded. Quantity and quality of butter produced are 20 per cent. better than last year, and the growth of young cattle in the same proportion. Farmers have bought as many goods and have paid as promptly as in past years. The middlemen have fallen off one-half. The results of the year show a greater balance in favor of our farmers than any year of the last six.

*Cumberland, Me.*: Crops all above average; no lack of food for man or beast at reasonable prices.

*Hancock, Me.*: One of our hardest seasons. Farmers are going into winter quarters with meagerly supplied larders. Throughout the long winter before us those who best solve the bread problem will be accounted our best brain farmers.

*Montgomery, Md.*: Good farming pays better during dry weather than any other time.

*Howard, Md.*: People much depressed by small production and low prices.

*Floyd, Va.*: Fall season very favorable; but little stock feeding yet.

*Orange, Va.*: The distressing want of money is a bar to all enterprise or improvement.

*Prince William, Va.*: A lean year with farmers.

*Greenville, Va.*: Some English and Scotch farmers have settled in the county and have commenced operations in a very different manner from the southern planters. The raising of turnips is a specialty with them, in which they have very good success.

*Prince George, Va.*: Low price of wheat and western competition since the opening of the Chesapeake and Ohio Railroad, has caused a decline of wheat acreage. We raise about 1,000 bales of cotton per annum.

*Camden, N. C.*: Farmers are in good heart and greatly encouraged; more manure made and more inquiry in regard to cultivated grasses. Our farmers do good work, but are deficient in farm-machinery. They accomplish too little for the labor employed.

*Greenville, S. C.*: Cotton, guano, and ruin are the three principal articles in this county. The land has been in corn one hundred years. It is difficult to make a crop or a report. The ship is sinking.

*Harris, Ga.*: Labor lower and more easily obtained.

*Schley, Ga.*: This section in far better condition than at any time since the war; more provisions; people nearer out of debt.

*Laurens, Ga.*: Few farmers are able to sustain themselves.

*Liberty, Ga.*: Agriculture slowly improving.

*Douglas, Ga.*: The repeal of the lien-law will cause some farmers to be pinched next year. This law created extravagance among certain classes. The county is well furnished with breadstuffs, but meat is scarce.

*Morgan, Ga.*: Low prices of cotton and high prices of supplies.

*Hamilton, Fla.*: All crops short.

*De Kalb, Ala.*: Rigid economy necessary.

*Henry, Ala.*: Farms more self-sustaining; more oats sown and more pork raised.

*Shelby, Ala.*: People more hopeful.

*De Soto, Miss.*: The pressure of the bread question has enlarged our wheat acreage to six times that of last year.

*Noxubee, Miss.*: Unequaled breadth of wheat sown.

*East Feliciana, La.*: Our condition deplorable.

*Henderson, Texas*: Plenty of corn; if our lands had been worked well we would have had abundance to spare.

*Dallas, Texas*: Hard times.

*Jackson, Ark.*: Half of the farmers will have to buy corn. Farmers of the hills to the west of us are bringing their cattle to winter on the cane of the river bottoms, which is abundant.

*Prairie, Ark.*: Immigration heavy, especially from Illinois and Kansas.

*Giles, Tenn.*: Stock in good condition but no demand for it; money scarce.

*Hardin, Tenn.*: Money scarce.

*Bedford, Tenn.*: The most trying year we have yet known, but the farmers have gone to work with a will and have put in more wheat and in better order than ever before.

*Lewis, Ky.*: The county is filling up with small tobacco-growers from Virginia. Tobacco land is selling at \$5 per acre. The acreage will be increased 50 per cent.

*Floyd, Ind.*: Money scarce.

*Whiteside, Ill.*: Looking for a good and rather prosperous winter.

*Livingston, Ill.*: Farmers in better condition than in any year since the war.

*Saint Croix, Wis.*: The poor yield and low prices of wheat depress our farmers. The flouring mills of Saint Croix keep the price at least 10 cents per bushel above what it would be otherwise.

*Washington, Wis.*: Low prices of wheat are very discouraging, causing farmers to hold back for higher prices. It costs 75 cents per bushel to raise wheat in this county, and the price is but 85.

*Crawford, Wis.*: Provisions plenty, but money scarce.

*Nicollet, Min.*: The prospect for a large crop of grasshoppers is flattering; any amount of eggs deposited.

*Washington, Iowa*: High price of pork compensates the low price of wheat.

*Pocahontas, Iowa*: Considering the threatening aspect of the grasshoppers last spring, farmers have reason to be satisfied with their crops.

*Appanoose, Iowa*: High prices of corn, oats, and hogs are making a very successful season for our farmers.

*Sioux, Iowa*: All our corn and half our wheat destroyed by grasshoppers.

*Putnam, Mo.*: Farmers are liberally rewarded by ruling prices of produce.

*Crawford, Mo.* : Drought and chinchcs nearly ruined the crops.

*Clay, Mo.* : Gloomy prospect for the winter; little stock to be fed and but little to feed with.

*Coffee, Kans.* : Pretty fair crops.

*Nemaha, Kans.* : The disastrous failure of many of our crops does not discourage us; we are preparing a still larger crop area.

*Franklin, Nebr.* : People suffering for food and clothing. Crops destroyed by grasshoppers and drought.

*Hall, Nebr.* : Grasshoppers destructive; they have left but few eggs.

*Boone, Nebr.* : Grasshoppers.

*Madison, Nebr.* : Many farmers destitute.

*Fumas, Nebr.* : Many settlers left destitute by grasshoppers.

*Sacramento, Cal.* : Hop-growers excited by the good demand for their products; good hop-land in demand at fancy prices; wool flat and dull.

*Alameda, Cal.* : Fall clip of wool the largest ever produced; producers holding up for higher prices; hemp yielded splendidly.

*San Joaquin, Cal.* : About 60,000 tons of wheat in the warehouses of Stockton.

*Corvallis, Oreg.* : Hop-culture attracting attention. Willamette bottom-lands produce a fine quality of hops. Flax-culture also increasing, and is the most profitable crop this year, yielding about 15 bushels per acre, with \$1.75 per bushel.

*El Paso, Colo.* : Grasshoppers and drought destructive.

*Fremont, Colo.* : Grasshoppers and drought.

*Box Elder, Utah* : Prices about the same as last year, when trains loaded with grain were constantly rolling to the Pacific. The farmer dispenses with superfluous merchandise and pays his laborers in products. Many persons in delicate health and crippled find suitable employment in the manufacturing establishments of clothing, shoes, furniture, &c. This makes us partly independent of foreign markets.

**LIVE STOCK.**—*Camden, N. J.* : Some farmers are losing their hogs. They are first affected with sleepiness and loss of appetite. The ears and belly become dark-purple, and then death ensues. No remedy. The disease attacks young pigs as well as fattened hogs.

*Frederick, Md.* : Sheep-husbandry increasing.

*King George, Va.* : Hogs not so heavy as last year, but their increased number will enlarge the yield of pork.

*James City, Va.* : Drought has left our cattle in poor condition for winter.

*Hart, Ky.* : Some farmers, after feeding nearly all their corn, have lost most of their hogs by cholera.

*Logan, Ky.* : Drought and worm so injured our corn as to impair its fattening qualities; there is a great difficulty in fattening hogs.

*Boone, Ill.* : A large amount of stock-feed must be imported.

*Marshall, Ill.* : Stock-growing has increased to an extent sufficient to consume nearly all the grain raised; about 23,000 hogs sold, averaging 300 pounds gross per head.

*Marshall, Ill.* : More hogs fattened than ever before.

*Delaware Iowa* : More fattened hogs than at this period of any year since 1861.

*Washington, Iowa* : Hogs 6½ cents per pound gross.

*Caldwell, Mo.* : Corn scarce; stock-hogs shipped to Iowa and Illinois for feeding.

**PRICES OF FARM-PRODUCTS.**—**MAINE.**—*Androscoggin* : Hay good and



prices fair. *Cumberland* : Sweet corn, our principal crop, has averaged \$70 per acre.

NEW YORK.—*Otsego* : Our staple crop is hops ; yield moderate but of extra quality, and nearly all marketed at 35 to 40 cents per pound. This will probably stimulate the cultivation next year and produce a large acreage.

PENNSYLVANIA.—*Philadelphia* : Rye grown mostly for the straw, which sells at 85 cents per cental.

MARYLAND.—*Frederick* : Pork \$9 per cental—a very profitable return.

SOUTH CAROLINA.—*Beaufort* : Short staple-cotton, 14 cents per pound ; sea-island, 33 cents ; rice \$1.50 per bushel.

TENNESSEE.—*McMinn* : Farmers refuse to sell their wheat on account of low prices.

TEXAS.—*Burnet* : Very little corn sold as yet ; farmers are holding on for higher prices, though the demand is yet small.

ARKANSAS.—*Franklin* : All crops maturing late in the summer were shortened by drought, but the prices range very low, owing to scarcity of money.

KENTUCKY.—*Hardin* : Hogs,  $7\frac{1}{4}$  cents per pound ; cattle,  $3\frac{1}{2}$  cents per pound ; horses and mules, no market. *Jessamine* : Hogs,  $6\frac{1}{2}$  to 7 cents per pound ; nearly all sold. *Henry* : Hogs all sold at an average of 7 cents per pound, a very remunerative price.

INDIANA.—*Gibson* : Pork  $5\frac{1}{2}$  to 7 cents per pound. *Floyd* : Hogs, 7 cents per pound. *Marshall* : Hogs, 6 to  $6\frac{1}{2}$  cents per hundred, gross ; cattle plenty at  $2\frac{1}{2}$  to 3 cents.

ILLINOIS.—*Putnam* : Good beef-cattle, 4 to  $4\frac{1}{2}$  cents per pound ; fat hogs, \$6.80 to \$7.25 per cental ; hogs nearly all sold. *Sangamon* : Very few hogs shipped to Chicago ; spring field-packers paying very good prices. Cattle are too cheap to pay for the corn they eat. *Washington* : Red wheat, weight 60 pounds per bushel, brings 85 cents, with a deduction of 5 cents for every pound short of 60.

WISCONSIN.—*Richland* : Hogs have brought 5 cents gross, live weight, which is very remunerative ; beef-cattle mostly sold at very low rates. *Crawford* : Hog-crop one-half short ; prices from  $5\frac{1}{2}$  to 6 cents per pound, gross ; beef-cattle from 2 to  $2\frac{1}{2}$  cents, gross.

IOWA.—*Delaware* : Prices of wheat lower than for ten years ; corn and oats command fair prices.

MISSOURI.—*Putnam* : Hogs selling at 6 cents per pound, live weight. *Marion* : Hogs 7 cents on the hoof. *Platte* : Hogs 6 cents, gross. *Caldwell* : Horses and stock-cattle bring very low prices ; fat cattle and hogs very good ones.

KANSAS.—*Douglas* : Pork selling from 5 to 7 cents, gross. *Cherokee* : Wheat is very low—65 to 80 cents per bushel. It is most profitable to keep a car-load for shipment, as it will then bring from 5 to 7 cents more.

SOUTHERN NEW MEXICO AND ITS CHARACTERISTICS.—*Doña Ana*.—Southern New Mexico, including the valley of the Rio Grande in this county, presents advantages greater than any other Territory.

*Climate and geographical features*.—The climate is unsurpassed in salubrity for man and domestic animals. The snows of winter never cover the summer-grown grasses from the stock. All the fruits are produced which can be grown where the thermometer averages 80° F. during five months in the year. The ground is not frozen to hinder the plow forty-

eight hours at a time in winter; and winter-wheat, rye, and such grasses as can be grown in its hot summer, grow the year round. The elevation, 4,000 feet above the sea-level, and the great distance from the oceans, produce an arid and clear atmosphere, highly charged with electricity, which invigorates and nerves the human system, inflates and heals the lungs, and is free from miasms. The region only needs facilities of access to make it celebrated as a resort for the asthmatic and the consumptive.

*Fruit.*—Extraordinary crops of apples, peaches, and grapes have been produced. Trees in many instances have been so overloaded that they have been crushed beneath their burdens. Grape-vines have nearly recovered from the frost of April, 1873, which killed the new growth and destroyed some entirely, as it fell on them while in bloom. The yield the past season was 80 per cent. of a full average crop. The eight grape-vines sent me from the Department in February last have all lived and made fine growth, none less than 3 feet and some 6 feet in length. The growth of our El Paso vines has been enormously large this year in all the vineyards which have been cared for, and the grapes have met with no mishap. Mildew, (*oidium*,) owing probably to our arid atmosphere, never affects the fruit or vines, and the root-louse is unknown; perhaps our alkaline soils will not allow it to live. This valley has been proved to be one of the best in the Union for the production of apples, pears, quinces, and grapes, except that the winter-apples of the Northern States ripen here in the fall, and we have as yet but few of the longest keepers.

*Insects.*—The codling moth, curculio, and other destructive insects are unknown in this region; the fruit is, consequently, fair and free from insect injuries. A large green beetle eats the ripe apples and peaches on the trees; but as they are not abundant and remain but a few days, they do but little damage. Corn has three enemies: a green worm which enters the ear by the silk, or through the husk, and eats the young grain; a worm which enters the stalk near the ground and weakens it till it falls, often before the grains are perfected; and a small black bug, (about the size of the chinch-bug of the Northwestern States, but not fetid, and, if I mistake not, in the larva state it is a white grub, about three lines in length,) which also feeds on the young grain, entering the ear by way of the silk, if no other opening presents itself. The grasshopper tribe never do any damage here—in fact, few are seen west of the Pecos River and south of the thirty-fourth parallel, though more made their appearance in the latter part of October than had been seen before. The system of irrigation in this valley would meet and prevent their advance if they should attempt to come among us. The large brown squash-bug, (*Coreus tristis*, Harris,) is likely to render precarious the production of fine squashes and pumpkins in this valley. Beans are attacked and greatly injured by what is evidently a *doryphora*, the larva of which is yellow, considerably smaller than the *decemlineata*. The perfect insect greatly resembles the lady-bird in color, though not so bright and much larger. They feed on the leaves of the beans. Potato beetles are here, but as potatoes are only raised in limited quantities, they are doing no damage. A slate-colored bug, six lines long, attacked the grape leaves in June, but did no damage besides eating them, and thus thinning the foliage. They staid three weeks, and left no eggs or young on the vines. The plant-lice, (*Aphides*,) in the spring destroy all the cabbage tribe, so that seed cannot be raised here; but later the lady-birds increase and destroy many of them, allowing cabbage to make fair heads. The wheat midge is injurious to old wheat in the bin, so that little or no old wheat is kept over.



## INTERNATIONAL STATISTICS OF AGRICULTURE AND FORESTRY.

The Secretary of State has referred to this Department a communication from the Austrian ministry of foreign affairs, received through Baron Lederer, Austrian minister resident at New York, inclosing the "decisions" of the "first international congress of agriculture and forestry," held during the Vienna Exposition of 1873, upon several leading points. An abstract of these decisions is herewith presented:

I. In regard to the measures to be taken for the protection of birds useful to agriculture.

The congress determined to petition the imperial and royal government of Austria to conclude treaties with other governments embracing the following points: 1. To prohibit the taking or destruction of insectivorous birds. 2. To designate an international commission of specialists who shall prepare a detailed list of such birds as should be protected. 3. To prohibit the taking or killing of grain-feeding birds between March 1 and September 15. 4. To forbid the use of nets, snares, or bird-lime for the capture of birds. 5. To prohibit the taking of eggs or young of birds, or the derangement of their nests, except in the case of injurious birds specified by the international commission. 6. To prohibit the exposure for sale of any insectivorous bird, dead or alive. This prohibition applies to grain-feeding birds during the time in which it is unlawful to molest them, as well as to the nests and eggs of all birds not officially classed as injurious. 7. Special cases, in the interest of science, may be excepted from the operation of these rules.

II. What sections of agricultural and forest statistics, and what methods of abstract presentation of facts, render it desirable that an international agreement take place in order to obtain results susceptible of comparison.

The congress expresses the conviction that agricultural and forest exploitation, as now developed, cannot give statistical data sufficiently exact for comparison upon its actual condition and progress in different countries. The efforts of international statistical administration, hitherto, have been insufficient to meet this necessity, which can only be met by researches of specialists in the matter, and upon the basis of common agreement between governments. This agreement should fix the stand-point of investigation, and arrange a uniform programme, exposing clearly what should be the aim of the statistical abstracts and the meaning of the nomenclature adopted. The governments should be pledged to each other for the execution, as regularly as possible, of the programme, and for the intercommunication of the results obtained.

For this reason the congress prayed the Austrian government to take the initiative steps to secure such an agreement between governments, and to expedite the organization of a system of agricultural and forest statistics. It is recommended that a census be taken every ten years in all countries at the same time that the census of population is taken; that it should comprehend the greatest subdivision of administrative districts, and especially the segregation of the most important agricultural regions; the area covered by agricultural and forest culture in general; the cultivation of the most important crops, and their medium yield calculated upon the largest possible number of years; the systems of culture in use; the superficies covered with different kinds of forest,

and the mass of woods they contain; the aggregate of live-stock, and the profit derived therefrom; the approximate number of great agricultural exploitations; the aggregate of rural population, &c., with a tabular summation of the whole.

This movement should result in publications showing clear and precise statements capable of comparison upon—

1. The market prices of agricultural and forest products as well as the exchange to which they give rise. These statements should be as prompt as possible, and as often as once a week in times of special interest.

2. The annual yield of crops in percentages of an average yield, for the earlier crops in September, and for the later ones before the end of November. These should be given in absolute figures by unity of surface and in totality as soon as possible after the period of production.

3. The prices of transportation by quantity and distance, by rail or other roads or by water; the wages of laborers; interest on money; voluntary or involuntary mutations of property; the purchase-price and insurance of goods, &c. These statements should be made as far as possible from official data or other reliable information, and should be made annually.

III. Question A. What points of agricultural experiment demand the organization of an international system of observations?

Among the many points of this character the following are specially recommended for international observation:

- a. Examination of the amount of ammonia and nitrous acid precipitated in rain, with indications, as precise as possible, of the place and time of such researches. This involves the question of nitrogen.

- b. Determination of the power of absorption of the soil by chemical and mechanical analyses, as well as the influence of fertilizers upon absorption.

- c. Researches upon the scientific basis that should be given to agricultural hydrotechny, embracing gardens for hydrotechnic studies.

- d. Analyses of the principal grains and seeds of different countries selected from different localities, showing their nutritive and commercial value.

- e. Definition of the influence of nourishment and breed upon the quantity and quality of milk, and the capacity of animals for fattening.

- f. Management of the feed, seed, cocoons, and eggs of silk-worms.

- g. Essays upon the variation of plants from the same seed through the medium of different methods and conditions of culture—that is, of acclimation.

To accomplish the above-indicated labors the governments are requested to complete the number of experimental stations and to furnish them with necessary means. The chiefs of experimental stations should assemble periodically with governmental delegates to deliberate upon the works to be accomplished, the most eligible methods of procedure, and the publication of results.

III. Question B. What points of forest experiment demand the organization of an international system of observations?

The congress decides—

1. Governments should by all means in their power introduce and organize forest experimentation.

2. Chiefs of experimental stations should be specialists in this business, and, as far as possible, devote all their time and energy to their work, satisfactory results being obtainable only by the accumulation

without delay of a large mass of observations to be utilized in a way corresponding to forest exploitation.

3. As soon as a system of forest experiment is organized in any country it should be placed in communication with similar systems in other countries, in order to act together upon points of international interest, as well as to determine the proper methods of action.

4. Questions demanding international observations are those which investigate the influence of forests upon climates, the amount of rainfall, the formation of springs, inundations, &c. This class of inquiries should be prosecuted at once, as the solution of the question of forest preservation depends upon the information obtained on this subject.

5. A permanent commission should be constituted for deliberating upon measures suited to the development of forest experimentation, with liberty to call in the aid of specialists.

6. The aid of different countries is invoked.

IV. What international measures seem necessary to remedy the ever-increasing devastation of forests.

1. An international effort has become necessary, especially for the preservation of forests at the sources of great water-courses, as their unlimited destruction brings about a fluctuation of water-levels very injurious to commerce and industry, filling the channels with sand, weakening the banks, overflowing the cultivated fields, and occasioning injuries affecting not only a single territory, but also other countries.

2. The preservation and management of forests, planted upon shifting sands, upon the summit and upon the declivities of mountains, upon the sea-shore, and other exposed places, is a matter of interest to all civilized nations, wherefore general principles should be established and put in force in all countries, binding upon proprietors of forests, the preservation of which is demanded by agriculture.

3. The preservation of forests being dependent upon good and sure management, especially in common forests, an international agreement is essential in order to make the researches and to obtain communications in regard to existing arrangements in different countries.

4. The Austrian minister of agriculture is requested to confer with other governments in regard to the preparation of statistical reports, embracing the localities of the forests to be protected, their extent, character, &c.

The congress finally concludes, that an international agricultural and forest congress, composed of delegates of governments and of great agricultural and forest associations, be convoked for the examination of legislative measures, facilitating the international exchange of agricultural and forest products, of finely-bred animals, of agricultural machinery, of artificial fertilizers, &c. The congress should also deliberate upon such scientific questions as will stimulate the progress of these great industries. The delegates should, at each session of the congress, report upon the international trade in alimentary products. The president should place himself in communication with governments and great agricultural and forest associations, in order to rally the force of these great interests to the statistical work contemplated.



## AGRICULTURE OF TUSPAN, IN MEXICO.

The Department is indebted to the United States consul at Tampico for the following interesting sketch of the natural resources, methods of husbandry, and agricultural capabilities of the comparatively unknown country in the neighborhood of the city of Tuspan, in Mexico, which has been to some extent settled by emigrants from the United States :

UNITED STATES CONSULATE,  
*Tampico, September 30, 1874.*

The city of Tuspan is in the State of Vera Cruz, about one hundred and twenty-five miles north of the city of Vera Cruz, and about ninety miles south from Tampico. It is located on the north side of the river Tuspan, about nine miles from its mouth, by the river, and about six miles in a direct line. There are about five thousand inhabitants in the city and some twenty thousand in all the canton or district of Tuspan. Of these, about two hundred and fifty are of foreign descent, principally from the United States and Spain. It is quite a picturesque city, as it is built at the foot of several hills, which are constantly covered with verdure. There are many beautiful groves of mangoes, interspersed with the graceful palm and orange, which, with a little foreign taste, could be made into beautiful gardens.

The land surrounding Tuspan, consisting of four hundred thousand acres, belongs to a stock company, and cost almost nothing some twenty years ago, the company having bought it from the original owner, who had his title to it from the viceroys of Spain. The price paid for it was about \$15,000, divided into shares of \$25 each. Notwithstanding the great desire of the Mexican government to induce immigration, there is really very little or no encouragement given by the people themselves; for, whatever may be the reasons for it, they will not sell an acre of the land. The planters who have come here, up to this time, bought one share from such person as was willing to sell, which share gives the planter the right to cultivate all the land he can, free of rent. This, at first sight, seems most favorable, but when the planters commenced their work it was with the expectation that in a short time they would get a title to the land and thus feel that they were improving what belonged to them, and not that they held an insecure title under a constitution that could be altered by an ignorant and prejudiced majority, which could at any time put most extortionate charges on their improvements. The probability is that if all these lands thus held by companies and municipalities are not put into the market, the government, either by taxation or purchase, will get possession of them, for nearly, if not all, the land on the Gulf coast is held by one or the other. The planters, therefore, do but little in the way of improvements, only putting up the necessary buildings for their families and their machinery.

The crop of sugar last season would have been over a million of pounds, but owing to adverse circumstances a large part of the cane was left in the field. There would also have been some twenty-five thousand barrels of molasses. The parties who are working these small plantations have but limited capital, and there are no large commission-houses in Tuspan from which planters could get such assistance as was needed at the time of sugar-making. Many of them were obliged, therefore, to lose a part of their cane. As there were no coopers in the place, the planters were obliged to get their barrels and boxes from Galveston, that being the only port in immediate and regular connection with Tuspan. Barrels from Galveston cost the planter over \$4 each, and as the lumber comes also from Galveston it makes the sugar cost half a cent per pound for only boxing it. Coopers are now establishing themselves in the place, who will soon have their steam-machinery, and as there is plenty of cypress a barrel can be made here as well and as low as in the United States. There are also plenty of trees suitable for box-lumber, and as there are now two steam saw-mills at work the boxes for sugar will cost very little for the future. There are also three steam sugar-mills, which of course reduces the cost of making the sugar. Another difficulty the planters encounter is that in Galveston, which is our principal market, the same sugar pays a half cent per pound more duty than in New York. The planters also suffer from the excessive freight to the ports of the United States. It is now supposed that, with the lines of steamships about to be established for New York, New Orleans, and Galveston, besides the sailing-vessels now running from Texas and other southern ports, boxes for sugar and barrels for molasses at fair prices, increased facilities for money to operate with, the sugar-crop will be doubled next season.

This part of Mexico is certainly one of the most favored by nature. The sugar-cane, once planted, lasts from fifteen to twenty years, and this with the very little care that is given to it by the Mexicans generally, and it is supposed that the same planting

will last for even a longer time when cultivated with the intelligence and experience of the foreign planter. Besides the cane, which grows to the height of 18 and 20 feet, and thick in proportion, some of the most valuable products of the world are produced spontaneously; for instance, vanilla beans, tobacco, gum-elastic, cedar, fustic, mahogany, sarsaparilla, jalap, anacahuite, and many other articles useful as medicines and dyes. Besides these, which grow naturally, there are in cultivation coffee, the best in the world; cotton, which, if left alone, grows to be quite a tree, bearing cotton for several years without replanting; tobacco, corn, beans, pease, and other vegetables; bananas, plantains, pine-apples, oranges, lemons, grapes, mangoes, and many other of the tropical fruits. So far does nature lend itself in aiding cultivation that when a native farmer commences work on a piece of land he cuts down the trees, lops off the branches, cuts down the weeds, and when dry burns the latter off, leaving the trees with the larger limbs as they fell in cutting, which lie there rotting for years. As soon as the burning is done, without plowing or harrowing, with a pointed stick, he makes a hole in the ground, into which the cane, corn, or other seed is planted. Should a few weeds spring up in the course of the year, they are cut down with a kind of cutlass called "machete." When the weeds become troublesome, he cuts down more woods, and abandons the old place. With no more cultivation than this the cane gives from 2,000 to 5,000 pounds of sugar to the acre; corn gives 30 to 35 bushels to the acre, and two crops a year, worth 75 cents to \$1 per bushel. There are times when it runs up to \$1.50. As corn can be planted every month in the year, one can always have green corn to eat. With nearly every other vegetable it is the same, as there are no frosts, the thermometer seldom falling below 40°, and rarely rising over 90° in the shade. From so little attention being given to these things, potatoes and onions generally retail at 12½ cents per pound, and other vegetables in proportion, all of them producing about the same quantity to the acre as in the United States. Beans are sold generally from \$2 to \$3 per bushel.

In starting a new plantation, and, of course, before one has time to cultivate a field of grass for his animals, he finds in the woods a tree which gives him all the forage he needs. The tree is called "Ojite," the leaves of which give more nourishment than the best clover. It is only necessary to cut down the small branches and twigs with their leaves on, and all the animals will eat it. As the tree grows wild, it is found everywhere, and an acre of woodland may have a hundred trees upon it. In clearing land they are generally left standing.

The grass most used here is called "Sacateparol." It is a jointed grass, and grows to be 4 or 5 feet high, and can be cut five or six times each year, and when once planted cannot be killed out. Where planters have many animals they are allowed to run on the grass, which saves the cutting. This, of course, requires a much larger space, and must be divided into five or six acre lots, and by changing the animals from one lot to another it gives time for the grass to grow. Allowing animals to run upon it gives a chance for weeds to grow, which must be cut off every two or three years. I have seen this grass growing among trees, and supported by the branches, attain the height of 15 or 16 feet.

The vanilla-bean (properly called vainilla) grows on a vine which, although growing from the root, is a parasite, as it will grow even cut from the root, for it takes its substance from the tree around which it clings by means of its thousands of fine tendrils. Like all parasites there are trees which are particularly adapted to its support. They are planted about 10 feet apart, in rows, at the foot of small trees which are left in clearing the lands. They begin to bear the third year, and in favorable years give from \$400 to \$1,000 per acre. No cultivation is needed but to cut down the grass and weeds; no plowing or spading being necessary. The bean is often gathered in September and October, but as it is not yet ripe the vanilla is of inferior quality and sells for a low price; but if left till the end of November or December it comes to perfection. It is then gathered carefully and spread out in the sun on mats, if the weather be favorable, but if otherwise it is placed in ovens, which processes change the color from a pale green to a deep rich brownish or purple and at the same time develop the oil which on pressure exudes from the bean. They are then packed in blankets while warm and put into large tin cases to go through a sweating process, again put in the sun and again in the blankets until they attain the proper color. They are then placed in a dry room upon shelves made of some open material so that the air can circulate around and under them. This evaporates all the watery part of the bean. When sufficiently dried they are put into large cases ready to be assorted into sizes and qualities. The person that raises the beans seldom cures them, for that requires a good deal of care and special attention. There are about fifteen different classes, but they are sold by the packers at one round price. Four years ago the value here was \$60 to \$70 per thousand beans; now they are worth from \$130 to \$180 per thousand, such has been the increase in the consumption without a proportionate increase in the cultivation. The people will work only about one hundred days in the year, which provides them with all they need, and as they will do no more there is very little increase in the production of anything. When the beans are assorted they are tied up neatly in



bunches of fifty beans each and packed in cases of tin holding from two to three thousand. These tin cases are lined with tin-foil and a ticket put on the lid giving the quality, size, and quantity. Some five or six of these tin cases are put into a neatly made cedar chest, which is sometimes lined with zinc and hermetically sealed so as to prevent moisture from getting to the vanilla in transporting, which would ruin it. These cedar cases are then sewed in mats, and these are covered with a coarse bagging to avoid the dangers of transportation on mules. In this manner all the Mexican vanilla goes to places of sale in Europe and the United States, where it is worth from \$9 to \$20 per pound, the thousand beans weighing from nine to ten pounds.

Formerly France was the great market for vanilla, but the enterprise of some of our American merchants has diverted the trade to New York, which is now the great depot of vanilla, and parties from Europe come to New York to buy.

Bananas and plantains yield from \$100 to \$125 per acre, and only require to be planted once, for as fast as the mother stock gives its bunches of fruit and dies, a dozen little ones start, phoenix-like, from its roots. They are planted about 9 feet apart, but after two or three years there are a dozen stalks in each hill, each bearing its bunch of fruit, worth here 12 to 18 cents a bunch.

The pine-apple yields even more, for it is planted in rows, about 3 feet apart each way, thus producing about four thousand to the acre, worth here about 6½ cents each, or over \$200 per acre. Like the banana, it only requires to be planted once in ten or twelve years, grows from the root, and each plant yields but one fruit. After the first year bananas and pine-apples must be thinned out, or the fruit becomes inferior.

Tobacco is destined to become one of the most valuable products of this part of Mexico, for the country presents the same advantages of climate, soil, &c., as the island of Cuba. Already has the attention of the planters been extensively devoted to its cultivation, and now there are cigars made here very little inferior to the best Havanas. There is a great want of experience in curing, and when men of intelligence shall come here, very handsome returns will be made for their labor. Already from \$300 to \$500 are realized from an acre, and, properly attended to, more may be. In places where it is now cultivated, it can be had at a very low rate in its green state.

A large business has been established in the exportation of honey from this place. Formerly all the honey was thrown away, bees being kept for the wax only, of which enormous quantities are used in all the ceremonies of the church. Now that honey has taken a commercial value, which it did not have three years ago, the number of hives has been quintupled, and is still increasing.

The first shipment was of 500 gallons, and last year there were over 30,000 gallons shipped from this place alone. As there is no winter here, and there are flowers all the year round, the bees swarm about four times in the year. Formerly there was no care taken of them and the bees died; but now each swarm is looked after, and new hives are made, as a valuable addition to the family resources. Some of the Indians in the neighborhood have as many as five hundred hives, from which the comb is taken about every four months.

Tuspan was an important place of business in former years, but it was overwhelmed by Tampico and Vera Cruz, and business died out, leaving but a small local trade. From the impulse given by the arrival of foreigners, some of whom have gone into planting and others into commercial affairs, business has again increased wonderfully. Six years ago the customs receipts rarely passed \$15,000 a year. Now they exceed \$50,000. Formerly there were occasional coasting-vessels coming in, but rarely a foreign vessel. The following will show the extent of the commerce for the year from July 1, 1873, to July 1, 1874. The English vessels named on the list are all vessels sailing to and from the United States, and which, added to the American vessels, show the importance of the trade which is growing up between the two countries.

Exports to Europe .....	\$43,849 00
Exports to the United States .....	89,149 56
	<hr/> 132,998 56 <hr/>
Imports from Europe .....	65,815 45
Imports from the United States .....	34,922 31
	<hr/> 100,737 76 <hr/>
Number of vessels entered during the year—	
National vessels.....	47
American vessels.....	38
French vessels.....	9
English vessels.....	3
German vessels.....	1
Total .....	<hr/> 98 <hr/>
Tonnage, 10,551.	



From the hills of Tuspan can be seen some of the spurs of the "Sierra Madre," which I suppose are a continuation of the Rocky Mountains of the United States. From the Telegraph Hills can be seen the perpetual snows of the peak of Orizaba, some seventy-five miles distant. In the San Juan Mountains, distant about thirty miles from Tuspan, and running parallel to the coast for some forty miles, are to be found some of the richest deposits of gold, silver, quicksilver, copper, &c., that are to be found in Mexico. Owing to the frequent revolutions there have been but few important explorations made, and these have been by persons of small capital. Let immigration commence, and it will not take long to make a small California in these mountains. Besides the San Juan Mountains there are many others that are said to be very rich in silver and gold. There are hundreds of petroleum-springs within a diameter of fifty miles around Tuspan, but none of them are worked. While kerosene, &c., can be brought from the United States at such low rates it will not pay to work these springs. Some of the asphaltum has been shipped to the United States, but the result has not been very favorable. One company was formed to work some rich springs near Papantla, and machinery was brought out, but the kerosene was very inferior, and could not compete with that brought here. The failure, I think, was attributable to a want of experience, and proper persons to superintend the work. There are no wagon-roads in this part of Mexico. All transportation is on the backs of mules. Trains of these animals are constantly coming and going, bringing in the products and taking back to the interior all the goods used.

EDMUND JOHNSON,  
*United States Consul.*

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## CO-OPERATION IN AGRICULTURE.

The question of large or small farms, like most others, has two sides. Neither system of farming can have the preference under all circumstances; each is best, both for high culture and large profit, under the proper conditions. To attempt large farming with small means and limited executive capacity is unwise and quite sure to be unprofitable. This rule would limit farming practice in this country to small areas in most cases. At the same time it is equally true, in agriculture as in manufacturing, that the largest return for each dollar expended is obtained by systematic operations on a large scale. This has been repeatedly demonstrated in this country, as in foreign lands, and notably in the West and in California. This has led to association for conducting the business of harvesting, thrashing, cheese-making, as it should lead to steam-plowing and other farm-work, and wherever better results may be secured by combining capital and labor in the management of large areas in general farm-culture.

A brief account of a co-operative-farm enterprise in England is given below, and also a translation and condensation from a record of long and successful experience in France, being the report of M. Victor Borie to the *Societe Centrale d'Agriculture de France*, of the co-operative farm of M. Bignon of Theneuille.

The abundant supply of capital in England, and the self-reliance and marked individuality of Englishmen, make the progress of practical association slower than in the neighboring country across the channel. In England the agricultural laborers are not the owners of the soil, or even renters of the land, though there were formerly "yeomen," or peasant proprietors, and in Westmoreland and Cumberland a class of small owners known as "statesmen." Few of the land-owners of England direct the cultivation of their lands, a third class, the "farmers," leasing lands, paying a money rental, and farming more thoroughly and successfully than the owners of the soil themselves. They furnish the working capital, which often amounts to \$50 per acre, and in some cases nearer \$100 per acre. In France there is a large class of small proprietors whose condition is in few respects superior to that of the English

laborer; who divide and subdivide, in the course of inheritance, until the plot of each is insufficient for the most meager maintenance. This class was in existence before the great revolution, but was increased greatly in the distribution of the extensive landed property of the church. There is another class, perhaps larger than the peasant proprietors, more numerous in southern than in northern districts, who have no ownership of land, but rent holdings, a part by the payment of a specified sum of money, and a part by a return in kind, under various conditions, similar to cultivating "upon shares" in this country. These share farmers are known as "metayers." While the entire metayer system is one of association, and of labor with capital, a co-partnership of landlord and laborer, it is only occasionally that the union involves a sufficient amount of labor under compact and manageable organization to produce the best results. Unlike the case of England, therefore, rented farms in France are not generally the best managed and the most productive. Yet there are cases in which success of a higher order has been achieved in co-operation on a large and liberal scale, notable among which may be named the

**CO-OPERATIVE FARM OF M. BIGNON.**—The intelligent political economist in France has long bewailed the unsatisfactory condition of French agriculture, the difficulties in the way of its rapid advance to an elevated status, among which have been named ignorance of the laborers, increase of wages, and emigration from the country. Many have deemed the *metayer* system a scourge to agriculture. They say "share-farming perpetuates ignorance and misery; ignorance and misery perpetuate share-farming." It is conceded that the standard of cultivation attained in England, if reached in France, would increase, at least one-half, the present production of the latter country; and yet it is properly claimed that great and incontestable progress has been made during the last quarter of a century.

With a desire to demonstrate the feasibility of ameliorating the condition of the farm-laborer, by a system of association in which the production of the soil and the profits, both of proprietor and laborer, could be increased, M. Bignon, in 1849, gave up to his brother his business in Paris, and purchased lands in the vicinity of his ancestral home, about 520 acres, at a cost of 81,220 francs, or about \$16,000, which is very nearly at the rate of \$31 per acre. "The land was argillo-silicious, with an impermeable subsoil; poor, damp, and almost entirely uncultivated; furze, broomsedge, brushwood, and heather covered the portions which were not gullied or denuded by flowing water." It produced a little rye and a few cart-loads of hay, scarcely sufficient to feed a meager stock of cattle, consisting of only 27 head, valued at 2,774 francs, or \$20 per head. Neither wheat nor artificial forage plants were ever grown. There was no lime or marl to aid recuperation. There were no practicable roads between the different domains, or farms, of which there were three, Lacroix, Bonneau, and Grandfy; and the farm-buildings were mere hovels. One of these, a miserable hut, such as still exist by thousands in France for the occupancy of metayers, has been retained in the midst of a fine meadow as a reminder of former days.

General opposition was encountered from the metayers, though nearly all were badly lodged, and insufficiently fed, crushed with toil, and "over head and ears in debt." With nothing to lose and everything to gain, they resisted improvement, as ignorance and squalor have always done. Compelled to undertake patiently their conversion by degrees, he resided continually among them, and by his intelligent direction, tact, the justice of his requirements, and his tenacity of purpose, advanced prosperously

with the work of disarming their prejudice and overcoming their opposition. As they were not sufficiently intelligent to appreciate an address to their reason, M. Bignon first spoke to their eyes, in the results of a few experiments undertaken at his own expense, so convincingly as to induce them to follow his lead haltingly. The contract entered into between proprietor and laborer, which has remained unchanged for more than twenty years, is substantially as follows:

ARTICLE 1. The proprietor renounces *a toute espece de redevance*—all rents or dues whatever, except the taxes which the estate is required to pay to the state.

ART. 2. The cultivator must furnish the number of men necessary to execute the work.

ART. 3. The work to be performed, the cultivation undertaken, the management of the stock department, shall be mutually discussed and agreed upon, and no change can be made without the consent of both parties.

ART. 4. The proprietor shall furnish, besides the land, the farm-stock, and shall pay the cost of the lime at the kiln, the cultivator transporting it, with the right to use the animals of the farm in its transportation. The cost of other manures, as guano, animal-charcoal, &c., shall be divided equally between the parties in the absence of special agreement. The proprietor shall pay for all manures used in the creation of permanent meadows upon lands not occupied by cereals or other crops. When these meadows are successfully established, the cultivator is accorded, by way of encouragement, 50 francs per hectare—fully \$4 per acre.

ART. 5. All products shall be equally divided between the lessor and lessee.

ART. 6. Profits of live-stock shall be similarly divided.

ART. 7. Extraordinary improvements, such as drainage, shall only be executed upon agreement between the proprietor and cultivator, who shall fix, in each case, the proportion in which each shall contribute to the work.

ART. 8. The direction of cultivation belongs to the proprietor.

This division of the charges was deemed essentially equitable, throwing the larger portion of the expense of improving the soil upon the proprietor, and dividing equally between the parties the cost of manures destined to double the common crop; and dividing equally the profits and losses of cultivation. There was one vital exception to this equality: in management, there was no division of responsibility in the control of labor; a competent director was a necessity, and the direction properly fell upon the owner of the property, whose interest in its income had been placed upon an equality with that of the labor which was to aid in its production.

So successful has been this copartnership that none of the metayers have ever withdrawn from the association, and the proprietor has long since declined active participation in the management of the estate, leaving farmers to their own direction, under the surveillance of his oldest son.

The improvement made has embraced lands, buildings, and the thrift, comfort, and material and mental elevation of the people. First the sedge and brushwood was removed, and the *débris* spread in yards, stables, sheep-folds, and roads, and, when sufficiently reduced, mixed with lime, and rendered available as a fertilizing compost. The great Dombasle plow, drawn by three or four pairs of oxen, and making furrows 10 to 12 inches deep, was used in breaking up; the heather-surface, turned under in winter, was harrowed in summer and sown with



rye in autumn, the seed being mixed with animal-charcoal. Wheat in the clover, fertilized by compost, followed the rye, and brought fine crops. A drain-pipe factory was established, the flat meadows drained, and a system of irrigation, by ditches and trenches economically run upon levels, gathered the fertilizing waters for distribution wherever their benefits were most needed. A quinquennial rotation of a restorative character, with three forage to two grain crops, was adopted, as follows:

*First year.*—Forage crops, roots, and fallowing wherever deemed necessary.

*Second year.*—Wheat and fall rye.

*Third year.*—Clover and ray-grass pastures, white clover.

*Fourth year.*—Clover and ray-grass pastures.

*Fifth year.*—Winter and spring oats or winter barley.

Not a rod of surface is unoccupied; and the example has been so contagious that heather and broom-sedge have disappeared from the neighborhood. Besides clover, lucerne, and ray-grass, the forage resources were increased by maize, vetches, the cavalier cabbage, and the forage-roots, rape and turnips.

In 1849 forage resources consisted of meager pastures and 40,000 kilograms of natural hay of poor quality; in 1869 it had increased to 240,000 kilograms of natural hay, 460,000 of cultivated forage, and about 400,000 kilograms of roots; in all about 1,100 English tons of feeding-material. In the same period the grain product was increased from 61 hectolitres\* of rye and 42 of oats to 1,541 hectolitres, consisting of wheat, barley, rye, oats, and buckwheat. In twenty years the value of live-stock had advanced from 2,774 francs to 69,480 francs, of which half was the property of the farmers.

The improvement in buildings was equally marked. The ruins were rebuilt or repaired by the proprietor. "Light, cleanliness, health, and happiness penetrated these residences formerly so miserable." Education followed; the children were taught to read, write, and cipher, and means taken to initiate the adults, in the long winter evenings, in the language and methods of progressive agriculture, presented in works from the libraries which M. Bignon had established upon each of the three farms. The stables were airy, spacious, and provided with all conveniences. Similar improvement had been attained in the animals themselves. Formerly numerous paths tracked field and heath, the ravines constituted roads, and the roads were lost in the swamps. These were all discarded, and a system of roads, intelligently surveyed and thoroughly constructed, took their place.

What has been the financial result of this enterprise? Certainly the metayers have been greatly benefited in large increase of income and comforts of life, in educational and social progress. The proprietor had invested originally 81,220 francs; the expense of improvement, including the cost of contiguous property purchased, was 71,597 francs. Upon this investment M. Bignon received an average return of 8 per cent., an income claimed to be superior to revenue from government stocks, and almost equal to the highest profits of the most doubtful of mobile values. At the same time the value of the estate had advanced from 384 francs to 1,500 francs per acre.

As early as 1858, M. Bignon received an honorable reward from his own *arrondissement*, and has received many since from regional and stock-growing associations: from the *Exposition Universelle*; in 1868, the

\*A hectolitre is 2.83782 bushels.

decoration of the Legion of Honor; and later, an award of the great gold medal of the *Société Centrale d'Agriculture de France*, which at the same time awarded silver medals to Messieurs Dausset, Guet, and Luchot, metayers of Theneuille, for the part in the improvement taken by the metayers.

The triumph of M. Bignon over the prejudices of the laborers, and his ultimate success in achieving as great improvement in the men as in the land, is thus recorded by M. Borie, in his official report of the inception and history of this enterprise:

M. Bignon desired that the demonstration should be complete and that the transformation which he had conceived should influence men as well as things. Men were also transformed. We have spoken with heads of families, malevolent witnesses of the first essays of the proprietor; they loyally confessed their error, and blessed him who had made them what they were. The misery of the metayers of 1849, which they have not forgotten, has disappeared from the domestic hearths. The debts (they had been able to go in debt) have been paid for many years; their savings have accumulated; metayers have become proprietors; they own domains worth from 20,000 to 30,000 francs; they have metayers under them whom they are educating in turn.

The families, by God's blessing, are augmented, but labor has increased with the number of children. Everybody can find, in the domain, occupation, and occupation profitable to the community. Thus at Theneuille, there is no such question as emigration, nor lack of hands. Labor does not fail and workmen are not lacking for labor. Here is one of the capital consequences of the work, essentially social, of M. Bignon. By association, intelligent, complete, devoted, on the part of the proprietor and his metayers, misery may be forever banished from our rural districts; the products of our soil may be multiplied; a union subsists between capital and labor, a union sincere, complete, which becomes profitable to the whole country.

Is such association practicable? The testimony of Theneuille, the example of the other group of farms, which M. Bignon is engaged in constituting upon the same basis, proves in an irrefutable manner how easy that association is when the proprietor desires to make it so. The example of Theneuille shows that such association is not only practicable, but that it is profitable to the proprietor who knows how to take the initiative, and to the metayer who supports it. This example, finally, shows that an association upon this equitable basis is durable by the sole will of the contracting parties for at Theneuille there are neither contracts nor bonds nor engagement of any sort.

**A CO-OPERATIVE FARM IN ENGLAND.**—In 1830 a large land-proprietor, named Gurdon, in Assington, Suffolk County, undertook the project of founding an association for co-operative farming. Inviting a few farm-laborers to meet him, he offered them jointly, at moderate rent, a farm of 60 acres and the use of £400, without interest, for ten years, on the condition that each member of the contemplated association pay into its treasury a fee of £3, (this fee was designed principally as a guarantee of good faith,) with the proviso that the farm should be managed by one of their number at fixed wages; the remaining members were to be at liberty to continue in the service of their old employers. Though this scheme involved little risk and the advantage of capital without interest, its author found laborers who had been always trained to rely exclusively upon wages for income reluctant to enter upon it. But a beginning was made, and, at the end of ten years, the association had accumulated, beyond what was needed for current expenses, enough to repay Mr. Gurdon the capital he had advanced. Fifteen years later they rented from the same patron 65 acres more, making 133 in all, to which 8 have since been added. The greater part of the additional outlay this involved was met by their surplus earnings, and the remainder by money borrowed at 2½ per cent. With this enlargement of land the number of members was increased from 15 to 20, and these limits of land and members continue up to the present day. The largest portion of the members continue to work for wages in the service of employers. A manager, with seven or eight hired hands, carries on the co-operative farm. The wife of the manager cares for the dairy prod-

nets, receiving for this service £10 annually. The present manager has been in charge the last twenty-five years.

A writer in the Pall-Mall Gazette, who visited this co-operative association the past season, reports that, at the age of over forty years, it is in a condition of assured and substantial prosperity. He found the farm stocked with 6 horses and 1 colt, 16 horned cattle, "milch-cows and fattening bullocks," 110 sheep, and large numbers of pigs and poultry, "varying according to the seasons." All the varieties of farm animals were of good breeds and in excellent condition. Artificial manures are largely used, and the fields of wheat, turnips, and other growing crops afforded proof of clean, good farming. The members and their families, by visible evidences of thrift and contentment, as well as by direct testimony, evinced a high appreciation of the advantages derived from this co-operative investment. "It is a rare, good thing for us poor folks," said one. Another said, "I wish there were such things in every parish, so that the good the rich people do the poor might be handed down from generation to generation; but poor folks must have a start; they have no money to begin with." The writer concludes:

A co-operative society that has been in existence for forty years; that has never got in debt, and has furnished a satisfactory balance-sheet at the end of the year; that, moreover, has developed thrift, independence, and good feeling to the extent here witnessed, cannot be pronounced a failure, but it must always be remembered that "poor folks must have a start;" nothing could have been done without capital—in this case borrowed capital.

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## ENTOMOLOGICAL RECORD.

BY TOWNEND GLOVER, ENTOMOLOGIST.

GRAPE-ROOT GALL-LOUSE.—As the *Phylloxera vastatrix*, or grape-vine-root gall-louse, is attracting universal attention in Europe, and especially in France, in consequence of the injury the insect does to the roots of the grape-vine, and is also said to be spreading in the United States, it will be of interest to our vine-growers to learn that a congress is to be held in the Tuilleries in Paris to discuss the subject in all its phases. We therefore give the following questions in an extract from the Wine and Fruit Reporter, New York, (copied from the London Wine Trade Review,) November 25, 1874:

1. Is the *Phylloxera* the cause of the new disease of the vine or is it the result? 2. How is it to be accounted for that hitherto none of the insecticides applied, nor other means recommended, have been able to destroy it? 3. If the *Phylloxera* is but the consequence of the disease, would it not be advisable to treat the affected vines prophylactically by means of powerful manure easily applied? 4. How is the destruction of the insect by submersion of the vines explained? 5. In what manner does the *Phylloxera* carry the infection from a plant infected to a healthy plant? 6. Is the *Phylloxera* that attacks the roots of the vines (the species best known in Europe) identical with the *Phylloxera* that preys on the leaves, (the species most prevalent in America?) 7. Are there one or more parasites of the *Phylloxera* in existence and known to science? 8. Are there any species or varieties of the vine-plant that successfully resist its attacks and defy contagion? 9. Would it be possible and practicable to multiply such varieties in France by grafting them on to the descriptions commonly planted in France? 10. Is it possible to calculate the money-value of the losses occasioned by the *Phylloxera* in the south of France? 11. What is the economic influence of the insect on the price and consumption of wine, on the traffic of the railways, and the revenue derived by the State from the tax on wine?

We expect the action of this congress will result in giving to the world some new facts regarding the natural history and habits of the



insect, which may clear up many hitherto-contested theories as to the identity of the grape-leaf gall-louse of the United States with the true root-gall louse of France, and which is supposed to be the same insect in a different form, and with different habits; the means by which they can be destroyed to the best advantage, no doubt, will be of the greatest utility to the grape-growers, both of Europe and this country, especially if the two are satisfactorily proved to be merely varieties of the same insect.

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## CHEMICAL MEMORANDA.

BY WM. McMURTRIE, CHEMIST.

**PARIS GREEN—ITS USE IN AGRICULTURE.**—The question of the use of arsenical compounds in agriculture for the destruction of noxious insects has elicited considerable discussion, and we have received from our correspondents in different sections, especially those infected with the Colorado potato beetle, very many and various questions, which have led us to the consideration of several points concerning it.

Some of the farmers seem to consider that, when applied to the potato crop for the destruction of the beetle, it will have an injurious and poisonous influence upon the tubers. Others fear the absorption of arsenic by the tubers to a sufficient extent to be injurious to the health of the consumer. We have also received applications for information concerning the use of arsenical compounds in solution and their probable effect upon vegetation. And the question as to whether or not arsenic could be absorbed and assimilated has also raised in our own minds the question whether the arseniates of the alkaline earths can substitute the corresponding phosphates, all being included in the same chemical classification, in the economy of plant-growth. The results of our experiments in this particular, though not complete, may, to a certain extent, settle the first point. The full description of these experiments must be given hereafter, but a partial statement of the results seems pertinent here. A number of boxes of soil were prepared with pure washed sand containing a mixture of kainit, (crude sulphate of potash,) gypsum, (sulphate of lime,) and each of the boxes containing respectively the arseniates of lime, baryta, strontia, and magnesia. Alongside of these boxes were others prepared in a similar manner, but containing the phosphates instead of the arseniates of the alkaline earths. In all of the boxes pease were sown, and after ten days a large number of the seeds planted in the boxes containing the arseniates had failed to germinate, and those plants which had sprung up were very weak and sickly. Fresh seeds were sown in those portions of the boxes in which the seeds had previously failed to grow, and this time a tolerably fair proportion of the seeds germinated. But, as in the previous instance, they failed to evince a healthy condition of growth. The seeds were sown early in August, and on account of the frost it was found necessary to collect the plants in the latter part of October, when they were just about blooming. On testing specimens at different stages of growth by means of Marsh's test, after having boiled the green plant with solution of chlorate of potash and hydrochloric acid, not a trace of arsenic could be detected. When the plants were taken up it was found that the tap-root was destroyed, and that sufficient small fibrous lateral roots had

been thrown out to form a thickly matted mass. The end of the tap root, or what remained of it, was covered with a thick, fleshy knob, not very large, but apparently an extension of the bark of the root. We are not fully satisfied as to whether this condition is due to a deficiency of nutriment in the soil, or to a distinctly poisonous action of the arsenical compounds. It would seem, however, that the latter was the case, since the tap-root of the boxes similarly prepared, but containing no arseniates, were perfectly sound. We shall, nevertheless, vary our experiments with a determination of this point in view.

Mulder states\* that plants may be poisoned by many principles which are poisonous to the animal organism, but holds that they do not attack directly what is called the vital principle, but affect the proximate organic principles of the plants, changing the conditions under which they exist, and thus prevent the transmission of liquids from the roots. In support of this idea he cites the coagulation of the albumen of the plants by the metallic oxides, such as lead, copper, &c. In case of arseniates of the alkalies and alkaline earths this would scarcely occur, since the acids of arsenic have no such effect upon albumen, and indeed there is, so far as we know, no fact recorded in which they have been known to form any combination with the other constituents of the plant. In the use of metallic compounds of arsenic, however, this action may possibly take place.

We have also conducted some investigations upon the assimilation of arsenic by plants in case of direct application of Paris green itself, but the results of our experiments seem in this instance also to be of a negative character. The investigation has not been as full as we desire, but we shall give the results for what they are worth. Upon a lot of "cow-pea," a leguminous plant used as a foddering material in the South, growing in the Department grounds, was freely dusted Paris green as obtained from the shops without any admixture of foreign substances. The material did not, however, seem perfectly unadulterated. In the first case the amount applied seems to have been too large, as all the plants were killed. Subsequently, however, a mixture of Paris green and gypsum, in the proportions usually recommended, was applied, and the small terminal buds and leaves were killed. But in a short time lateral buds appeared, healthy branches developed, and the plants grew thriftily without seeming to be otherwise affected. Examinations of the plant at different stages of growth, by means of Marsh's test, carefully applied, failed in any case to reveal the presence of arsenic. It is, however, possible that, had the plants had an opportunity to mature, arsenic might have been assimilated. In this connection the results of the experiments of Prof. E. W. Davy† are exceedingly interesting. Being aware of the fact that nearly all of the sulphuric acid employed in the manufacture of superphosphates in Dublin was made from pyrites, which almost invariably contained arsenic, he considered it of some importance to determine whether the arsenic which thus passed into the superphosphates, and must, therefore, be communicated to the soil in the most favorable condition for assimilation by plants, could enter into the vegetable organism. As a preliminary experiment to determine whether arsenic could be taken up by the plant, he watered pease, which had been transplanted into a pot containing rich garden-soil, with a concentrated aqueous solution of arsenious acid. This treatment was repeated every second or third day for more than a week, and then discontinued. At the end of some

\*Chemistry of Animal and Vegetable Physiology. English translation, 1849, page 626.

†Phil. Mag., vol. xviii, p. 105.

months, the plants having grown to full size, flowered, and fruited, it was found by application of both Marsh's and Reinsch's tests that the arsenic had permeated every part of the plants. Being thus satisfied that plants were capable of taking up arsenic during their development, he made some experiments with the use of phosphates containing arsenic. The sulphuric acid employed in their manufacture contained about 2.8 pounds arsenic per ton, and the proportions employed were one ton of acid per two tons of bone. The amount of arsenic in the superphosphate was therefore relatively very small.

In his next experiment he prepared a soil consisting of one part superphosphate and four parts garden-mold, into which he transplanted a small cabbage-plant. At the end of three weeks an examination for arsenic, with a small portion of the plant, (113 grains,) gave the "most distinct indications of the presence of that substance." Since, however, he considered the conditions in this case very favorable to the absorption of arsenic, he examined carefully different samples of Swedish turnips which had grown in a soil to which superphosphate had been applied at the rate of six hundred-weight per Irish acre, and found arsenic in each case. It is also stated that sheep refused to feed freely upon the turnips grown upon soil to which the superphosphate had been applied.

The results of Professor Davy's experiments do not, however, seem to have been confirmed by the results of later investigations, and, in fact, so far as we have been able to learn, these have been of a decidedly contradictory character. Thus Mr. E. H. Ogston,\* doubting that a saturated solution of arsenious acid could be applied to plants without injury to them, and that the amount of arsenic communicated to the soil by the application of superphosphates would be large enough to appear in the plant in sufficient quantity to be detected by the ordinary tests of the laboratory, repeated the experiments by watering some strong cabbage-plants of some weeks' growth with a saturated solution of arsenious acid, and though only two doses were administered in three days, the plants drooped and died in less than a week. Repetition of this experiment with Scotch kale afforded similar results. After a few days all the plants experimented upon were removed from the ground and various portions of the stems and leaves examined for arsenic by means of the Marsh's test, when the poison was found "only in the portions of the stems close to the roots, which were darkened in color in the interior. In no case was the poison found in the stem at more than five inches from the ground." Mr. Ogston experimented with other solutions of arsenious acid, but found that when the dilution was sufficiently great to prevent injury to the plant, no arsenic could be detected in any portion above ground.

With regard to the absorption of arsenic in case of the Swedish turnips, without any experiments, he reasons that the quantity applied per acre in the superphosphate is not sufficient to render it possible to detect its presence in the root. But admitting that the plant will absorb arsenic with the same avidity as phosphoric acid, which, reasoning from the evidences on record, is scarcely possible, close calculation shows that when the quantity which might be introduced to the soil through the medium of the superphosphate is present, enough could be taken up to be detected by the delicate tests at our command.

The conclusions arrived at by Mr. Ogston seem to be corroborated by the results of the investigations of Daubeny.† In his experiments he

\* Gardner's Chronicle, 1860, 216.

† Jour. Chem. Soc., XIV, 225.



watered a plot of ground of 100 square feet, containing young barley, with a solution of arsenious acid in the proportion of two ounces per ten gallons of water, and after six days the crop had a blighted appearance. A similar plot was then watered with a solution of half this strength, and after two applications at an interval of twelve days, this crop also appeared to be injured. The treatment was, however, again continued after a short time, so that in all five applications were made, yet the crop matured.

A similar plot sown with turnips received applications amounting to 4 ounces arsenious acid per 100 square feet, and were in no wise injured. In case of the barley the indications of arsenic shown by the Marsh test were very slight, and in case of tests made both by the author and by Professor Brodie decidedly negative results were given.

It will therefore be seen that the general character of the results which have been obtained from investigations upon this subject has in the main been negative.

Having thus given the results of our preliminary experiments and the history of the matter, so far as we have been able to obtain it, we shall continue our investigations in this regard and publish the results from time to time as they may be obtained.

**ALUMINIUM IN PLANTS.**—It is well known that alumina is seldom if ever present in the ashes of the phænogams; but since 1853, when the fact was determined by Ritthausen, its presence in the cryptogams has been generally admitted. Prof. A. H. Church has furnished evidences of this fact in the results of his late researches upon plants of this class, as exhibited in the following table :

	Percentage of ash in dry plant.	One hundred parts of ash contain—	
		Silica.	Alumina.
<i>Lycopodium alpinum</i> .....	3.68	10.24	33.50
<i>L. Clavatum</i> .....	2.80	6.40	15.24
<i>L. Selago</i> .....	3.20	2.53	7.29
<i>Selaginella ardensii</i> .....	11.66	41.03	0.26
<i>Selaginella spinulosa</i> .....	3.44	6.67	None
<i>Equisetum maximum</i> .....	20.02	62.95	None
<i>Ophioglossum vulgatum</i> .....	8.25	5.32	None
<i>Ptilotum triquetrum</i> .....	5.06	3.77	Trace (?)

**SULPHOCYANIC ACID POISONOUS TO PLANTS.**—The poisonous and corrosive action upon plants, lately attributed by European agriculturists to phosphoric acid, has been found to be due rather to the sulphocyanic acid existing in the crude sulphate of ammonia obtained as a by-product in the manufacture of coal-gas, and employed in the manufacture of superphosphates. This sulphate of ammonia often contains considerable quantities of sulphocyanide of ammonium, which, according to certain German investigators, exerts a decidedly poisonous influence upon vegetation. Since, therefore, it is advisable that the commercial sulphate of ammonia used for agricultural purposes should be free from this compound, it should be previously examined by testing with salts of the peroxide of iron, which indicates its presence by the appearance of a red coloration.

+ **WHAT IS AN AMELIORATING CULTURE ?**—This subject has been ably

discussed in a very interesting paper by M. Gaetan Cantoni, Director of the Royal Superior School of Agriculture at Milan, Italy, published in a late number of *Journal d'Agriculture Pratique*. The discussion is based upon the opinion that the best system of rotation is not that of a succession of crops according to their different chemical necessities, nor that which takes from the soil the smallest quantity of mineral plant-food, but rather that which, though it takes from the soil more of fertilizing materials, also returns a larger quantity in the residual matter which remains after harvesting the crop. Fields may preserve an undiminished rate of production without manuring for a year or two. Thus, after crops of clover or lucerne, either of which make large demands upon the soil, the land with an application of fertilizers entirely insufficient to supply the deficiency caused by the demand already made upon it, may be devoted to other crops to advantage, and the profit of subsequent crops will be proportionate to the time during which the land has been in clover or lucerne. The same experiment after a single crop of wheat or barley would furnish small results, yet the amount of valuable constituents of plant-food removed by these crops is by no means as large as that removed by the two crops of clover or lucerne. In evidence of the latter fact the following table was prepared, showing a comparison of the total quantities of valuable fertilizing materials removed by a number of crops of clover or lucerne and a single crop of wheat.

Matter extracted.	Clover, two crops.	Lucerne, five crops.	Wheat, one crop.
	<i>Pounds per hectare.</i>	<i>Pounds per hectare.</i>	<i>Pounds per hectare.</i>
Dry matter in normal condition produced.....	44,095	165,255	11,023
Nitrogen .....	882	3,805	97
Phosphoric acid .....	308	842	46
Potassa .....	448	2,513	57
Lime .....	545	4,763	22

The amount of fresh manure necessary to restore these elements of plant-food are exhibited below.

	Clover.	Lucerne.	Wheat.
	<i>Tons.</i>	<i>Tons.</i>	<i>Tons.</i>
To restore nitrogen.....	89	383	10
To restore phosphoric acid.....	67	182	10
To restore potassa.....	34	190	5
To restore lime.....	43	380	2

This shows that the exhaustion of the soil by crops of clover and lucerne must be much greater than in the case of wheat.

The leguminous crops are considered ameliorating, because they seem capable of absorbing and assimilating atmospheric nitrogen, but they cannot obtain from the atmosphere the mineral matter they contain. The favorable action must therefore be sought in some other cause. According to M. Cantoni, this cause may be found in the modifications occasioned by different crops in the soil, among which may be enumerated the mechanical treatment necessary for certain crops; abundant fertilizing, with a view to the production of surplus leaves; and, finally,

the quantity and quality of residues of crops returned to soil after the harvest. The latter is considered by the author the main point in question, and in this connection cites the results of the observations of M. Weiske, as follows :

*Crops leaving residue upon the soil.*

Crops.	Air-dried matter.	Nitrogen.	Phosphoric acid.	Potassa.	Lime.
Red clover, lbs., per hectare..	22,090	475	186	203	643
Lucerne, lbs., per hectare..	23,940	338	97	91	487
Wheat, lbs., per hectare ...	8,610	58	29	46	210
Barley, lbs., per hectare ...	4,930	57	30	24	93

On comparison of the figures found in the above table, we find that the residue from the crop of clover will furnish enough nitrogen to satisfy the demands of a crop of wheat producing about 283 bushels per hectare,\* and phosphoric acid sufficient for 227 bushels; the crop of lucerne leaves enough of nitrogen for a crop of 227 bushels, and of phosphoric acid, for 113.5 bushels. The wheat and barley would, however, leave sufficient for only 28 bushels. The difference in the value of these crops for the purposes mentioned is very evident, since it appears that the leguminous crops leave in a favorable condition for assimilating enough of fertilizing materials to satisfy the demands of several crops of cereals; while in case of cereal crops nearly all of the elements of plant-food are carried off in the grain.

In favor of leguminous plants for green manuring, the author advances the idea that besides carrying into the soil these mineral elements of plant-food, they also supply to the soil an amount of moisture corresponding to a rain-fall of about three millimeters, or about 0.12 inch. The moisture received by the soil in this way affords an advantage over that supplied by the rain in that it is not so rapidly dissipated by evaporation.

In conclusion he considers that the explanation of the good effects of the so-called ameliorating crops does not depend upon any special faculty possessed by certain plants to assimilate atmospheric nitrogen; that this ameliorating property cannot be taken in an absolute sense, since all plants diminish rather than increase the quantity of materials for plant-food in the soil; that an ameliorating culture should be defined as one which yields to the soil residues, which, by their quantity and quality, may favor the demands of subsequent crops; that the quantity and quality of the residues of green plants are more favorable than those of dead plants; that it is therefore unadvisable to wait for the death of a crop of clover or lucerne before changing the culture; that the usefulness of a meadow in rotation and plowing under green vegetation may be explained by the power displayed by each plant to seek, choose, assimilate, and accumulate valuable materials which may be returned to the soil in a readily assimilable form; that plowing under green vegetation, as well as fertilizers, should be specialized according to the subsequent crop.

\* 2.47 acres.



## BOTANICAL NOTES.

BY DR. GEO. VASEY.

**THE PERSIMMON.**—Colonel Barr has presented to this Department specimens of a variety of persimmon, grown on the grounds of the Reform-School near this city, which possesses such qualities as entitle it to attention. The tree is young, nine or ten feet high, and not over 1½ inches in diameter. It grows under an oak tree. There is a group of seven or eight trees in the vicinity, but only this one bears the peculiar fruit. This is somewhat acorn-shaped, and larger than the common persimmon fruit. It does not seem to possess much astringency, and its flavor is excellent. Some of our nurserymen would do well to make a specialty of the improvement of the persimmon, and here is one of nature's hints in that direction. The fruit referred to matures in November. One tree of the group bears fruit which matures in August. It is of medium size, and very sweet.

**OXYTROPIS LAMBERTI**, (said to be poisonous to cattle.) Recently some specimens of a plant sent from Colorado by Dr. P. Moffatt, assistant surgeon, U. S. A., to the office of the Surgeon-General, were submitted to this Department for name, accompanied by the following extract from the report of Dr. Moffatt:

Cattle-men inform me that a weed grows among the grass, particularly in damp ground, which is poisonous to horned cattle and horses, and destroys many of them. From the manner in which they describe its effects upon the animals it must be of the nature of a narcotic, and they assure me that cattle, after having eaten it, may linger many months or for a year or two, but invariably die at last from the effects of it. The animal does not lose in flesh apparently, but totters on its limbs and becomes crazy. While in this condition a cow will lose her calf and never find it again, and will not recognize it if presented to her. The sight becomes affected so that the animal has no knowledge of distance, but will make an effort to step or jump over a stream or an obstacle while at a distance off, but will plunge into it or walk up against it upon arriving at it. The plant was pointed out to me, and seems to be related to the *Lupin*.

The plant submitted to us as the one in question was the *Oxytropis Lambertii*, a plant of the pea-family, nearly related to *Astragalus*, and also to the *Lupin*. It grows in considerable abundance upon the elevated plains near the mountains, and extends up into the mountains to the elevation of 7,000 or 8,000 feet. It is perennial and grows in small clumps, the leaves being all at the base, and sending up a few erect flower-stalks, seldom over a foot high, which have a spike-like raceme of rather showy flowers, varying in color from cream to purple. These are succeeded by short, stiff, pointed pods, which contain a number of small, clover-like seeds. The effects ascribed to this plant are quite similar to those produced by several species of *Astragalus* in California, as mentioned in several of the monthly reports of this Department. (See Monthly Report, October, 1873.) Careful observations should be made by residents of the region where this plant grows to ascertain if it produces the effects ascribed to it.

**A VALUABLE GRASS FOR THE SOUTH AND SOUTHWEST.**—Specimens of a grass have been sent to us from Texas by Mr. Pryor Lee, concerning which he makes the following remarks:

1. General experience has not fully tested the qualities of this grass, but some characteristics are recognized by many practical observers in Southwestern Texas.
2. In this region this grass, in the condition of well-cured hay, is regarded as more nutritious than any other grass.

3. This grass grows only in cultivated land ; it best prospers in the warmest fourth of the year ; during this time two full crops may be gathered. Its luxuriant growth without much root subdues other grasses and some weeds, with the result of leaving the ground in an ameliorated condition.

4. This grass little interferes with cultivation of a corn-crop ; and, after the corn is worked enough, this grass matures its heavy crop simultaneously with maturity of the corn ; and, the corn being gathered, both the corn-stalks and the grass together may be turned under the surface in preparation for an autumn, winter, and spring crop of some other kind of grass or small grain.

5. Without a corn-crop this grass may give two cuttings in the summer, and also give full opportunity for using the same ground in one or more other crops during the autumn, winter, and spring.

6. Diligent inquiry has not obtained information that this kind of grass has yet appeared either out of Texas or within it eastward of the Colorado Valley, leaving an impression that such grass cannot be successfully propagated, except in such a climate as obtains in Southwestern Texas.

This grass is a species of *Panicum*, probably *P. fasciculatum*, Swartz, which grows in Mexico and South America. It has likewise been sent from Colorado, where it has probably been introduced. We hope that those farmers living in the Southwestern States will give this grass a trial, as it seems to promise well for that section.

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## MICROSCOPIC OBSERVATION.

BY THOMAS TAYLOR, MICROSCOPIST.

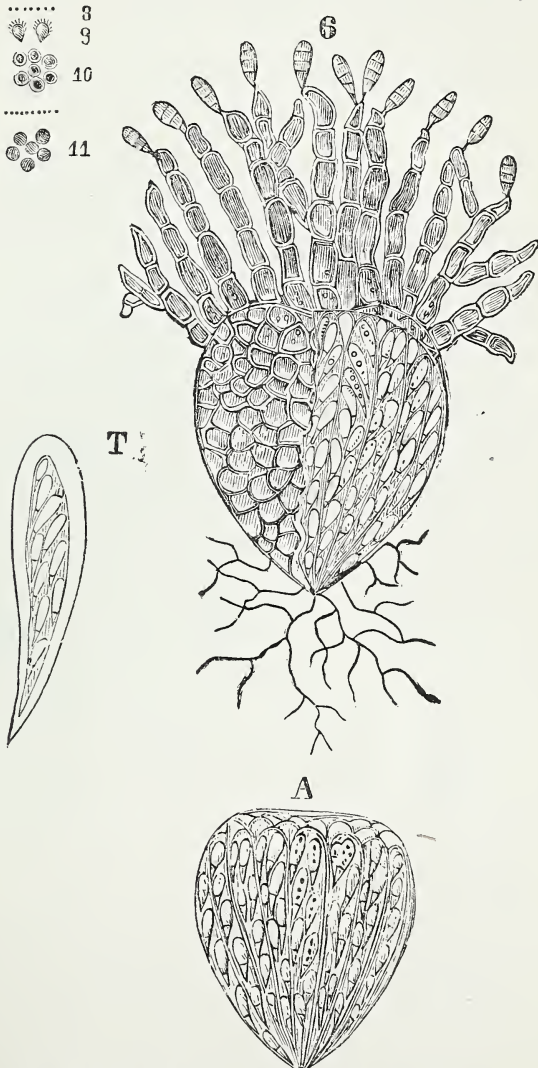
BLACK-KNOT OF PLUM AND CHERRY TREES—(Continued.)—Having recently received from a gentleman of New Jersey, Mr. Abram McMurtrie, some excellent specimens of black-knot taken from plum and cherry trees of different ages, I resumed my investigations of that disease with very satisfactory results. A portion of the fungus being removed from a specimen of the black-knot which had grown on a plum-tree about seven years old, and being submitted to an examination by the microscope, at a very low power, exhibited forms of fruit (perithecia) as seen at 8. When viewed in section by a higher power, it appears as at 9 ; and in top view as at 10, showing an indentation in each perithecium.

When a perfect specimen, as seen at 9 or 10, is submitted to the action of nitro-muriatic acid for about thirty minutes, a slight decomposition of the acid takes place, indicating that the resinous or oily matter of the perithecium becomes oxidized. These strong mineral acids have no destructive action on the organic structure of the perithecium, although they have the property of bleaching it in some degree, thus rendering it translucent, and making its cellular structure visible. If ammonia is added in drops to the specimens, after having been treated with acids, their albumenoids become pliable. This process is especially valuable when applied to matured and dry specimens ; 6 represents a very highly magnified specimen of a perithecium, a part of which is in section and represents the internal arrangement of the asci and sporidia in them. From my recent experiments on black-knot I am now able to demonstrate its structure. If a perfect perithecium which has been treated with acid and ammonia, as previously described, is gently bruised on a microscopic glass slide, by any of the well-known modes, the asci containing the true sporidia will escape, and frequently the sporidia will be seen in profusion on the glass. I have counted as many as ten sporidia in one ascus. When the perithecium is very pliable, and the interior mass of

asci well matured, it may be removed entirely by pressure, as represented at A. A power of about 600 diameters is necessary to see it properly.

An ascus measures about the one thousandth of an inch in diameter, and is about seven times its diameter in length.

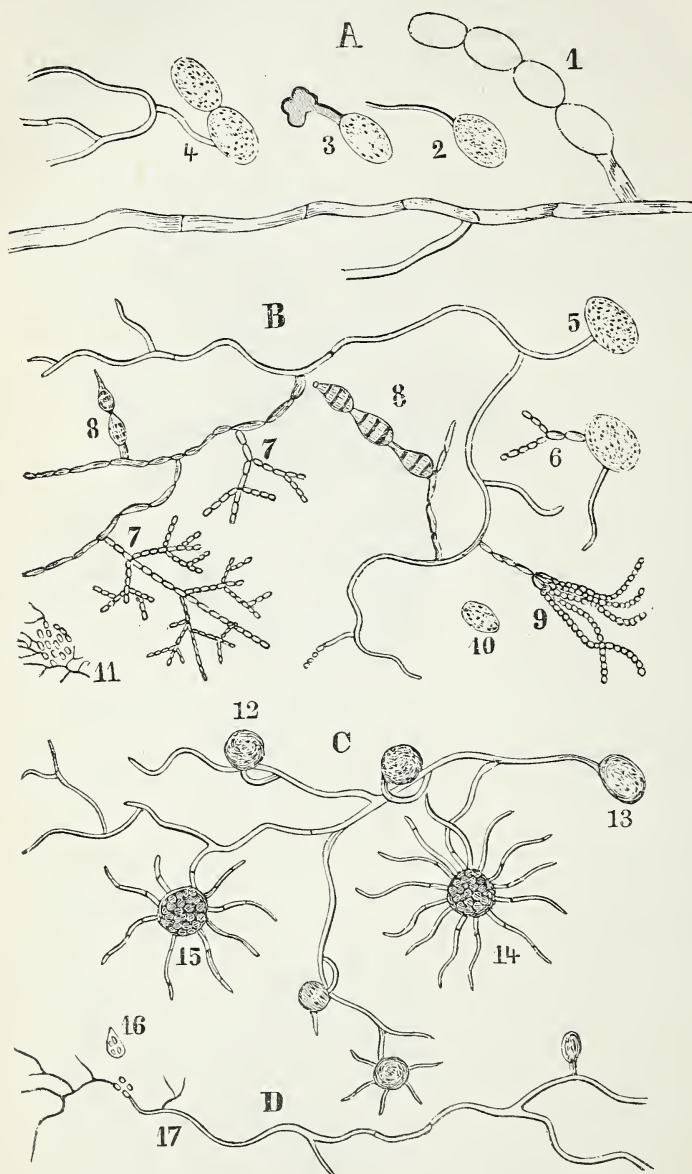
If an ascus is treated with an alcoholic solution of iodine, containing a few drops of nitric acid, its nitrogenous matter becomes stained of a dark amber while the sporidia retain their natural color. The asci will frequently exhibit, when treated with acids and alkalies, an expanded membrane of very delicate texture and quite transparent, as exhibited at T.



The true cause of this disease is unknown at present. My future investigations will be principally confined to its mode of propagation. In-



vestigations of this character lose much of their value when they are confined to the microscope and laboratory. Districts affected with the dreaded pest should be visited, and the roots of the trees and their branches examined, that the investigator may become acquainted with all the stages of growth of the fungus, and thus ascertain how the disease is propagated.



THE FUNGUS *ERYSIPHE TUCKERI*.—On the 15th of May last, one of the foreign grape-vines of the experimental grapery of the Department was found to be affected with the fungus called *Oidium Tuckeri*. It first

appeared on the leaves, then on the green branches, and finally on the fruit.

I determined to take advantage of its presence to make further investigations in reference to its habits. I secured on a glass slide a few of its oidium spores, placed them in a clean glass jar containing a little water, excluded the atmosphere by a ground-glass stopper, and subjected the jar to a temperature of about 75° Fahr. during the investigations. On the second day the spores were examined, when it was found that many of them had germinated.

1, group A, represents the oidium. I think that the spores in this case are thrown out from the peduncle\* in the same manner as soap-bubbles from a pipe. I have never seen a case of an oidium spore having a small spore attached to it as if in the act of reproducing a fac simile of itself, as is so frequently observed in the spores of the common yeast-plant, (*Torula cerevisie*.) The oidium spores germinated and threw out branches as shown in the drawings 2, 3, and 4. The protruding branch of spore 2 differs in form from that of 3. The branched state of 4 illustrates the changes which take place in 2. I have observed many spores germinating like 3, upon the functions of which I have been unable to decide. After exposure for a few days, more new forms of fungi appeared on the branches of the mycelium of the oidium. (See 5 and its ramifications, group B.) Nos. 6 and 7 next appeared, followed by 8 and 9; 10 represents a highly magnified spore of *Penicillium glaucum*, 9; 11, the spores of 7 germinating, which resemble *Penicillium Armeniacum*, Berk. The flask-shaped spores, 8, (*Antennaria tenuis*, Ness.) are generally the last to appear. They belong to a genus of *Torulaceæ*, remarkable for their close resemblance to a Florence flask.†

My object was to ascertain what changes, if any, would take place during the germination of the spores. I therefore varied my experiments in numerous ways, and am satisfied that the forms 6, 7, 8, and 9 have no relation to the oidium under experiment, but are distinct fermenting plants, living on and consuming the mycelium and spores of the oidium, preventing the further healthy growth of the vine fungus. The facts observed have an important bearing on the cultivation of foreign grape-vines when grown in moist hot-houses, for since it has been shown that parasitic fungi are nourished by the spores and mycelium of the *Oidium* of the vine and grow profusely on them, the vine itself will become affected by the growth of the fungi over its leaves, green branches, and fruit. I have frequently transferred to varnished glass slides the same class of spores direct from a leaf which had been kept unusually moist while growing. These will doubtless hasten the death of the plant on which they grow. The evidence is conclusive that when the flowers of sulphur have been applied early to mildewed vines, they have been saved, and that later applications have been unavailing. This may arise from the fact that the other forms of fungi, such as I have pointed out, may assist in the destructive work. These experiments have been repeated often under varied conditions, with an unvarying similarity of results. A slip of glass was varnished, and, when nearly dry, a vine-leaf covered with the *Oidium* was pressed on it, so that many of the spores adhered to the varnish. When the slip was introduced into a moist jar at the temperature mentioned, the spores adhering to the varnish germinated, as shown at B. When placed in an atmosphere containing turpentine, benzine, or carbolic acid, they failed to germinate, and the

\*The stem or stalk that supports the flower and fruit of a plant.

†The microscopic dictionary says of this genus that "no British representatives of this genus appear to have been recorded hitherto," (p. 29, vol. 1, second edition, 1860.)

distorted forms of the *Oidium* were clearly seen, showing the destructive action of these substances on fungus germs.

I next placed the dust of roll sulphur on *Oidium* spores, and also the dust of the flowers of sulphur on a second lot, each set being secured on glass slides, an inch and a half wide by six inches long.

These slides were subjected to moisture and heat, as before, in separate jars. After the usual exposure it was observed that the same fungus forms of group B appeared on the germinating *Oidium*.

These results were not expected, as it has been generally supposed that sulphur is a perfect preventive of fungoid growth. This led me to test the effectiveness of sulphur for that purpose. I placed in an eight-ounce jar four ounces of pure water, one ounce of green peach-leaves, and two ounces of the flowers of sulphur, and subjected the whole to a temperature of 75° to 80° F. In three days fermentation commenced in full force, giving off a strong odor of sulphureted hydrogen. In the course of ten days the leaves were completely destroyed by the fermentation, demonstrating that, if the flowers of sulphur are anti-fungoid, the beneficial results of its application have not been due, as has been supposed, to its chemical qualities, but, probably, to its absorption of moisture.

These experiments also go to show that the vine fungus is a true parasite, and that it will not fruit when removed from the plant on which it grows. A peculiar condition of the atmosphere may also be necessary. The *Oidium* form of the fungus is not supposed by mycologists to be a true mold, but merely a condition of a species of *Erysiphe*. Group B represents a theoretical view of its supposed condition; 12, 13 and 14, its stages of fruiting. Figs. 14 and 15 are filled with little sacs containing sporidia which germinate. Fig. 16, group D, represents one of them, and 17 a branch of mycelium growing from them on which grows the *Oidium*.

It is stated on good authority that the fruit of this fungus has not been seen on the vine in Europe. In the fall and summer of 1871 and also 1872 I found specimens of its perfect fruit in great profusion on the foreign vine of the graperies of the Department. During the last two years, 1873 and 1874, not a single specimen of fruit could be found. Late in the fall of 1872 Mr. William Saunders, superintendent of the experimental gardens, had all the branches of the foreign vines in the graperies painted with a mixture of clay and carbolic acid, for the purpose of destroying the fruit of the vine fungus. Future observations may show that such treatment will prevent, in a measure, the ravages of the vine fungus. It has long been observed that very dry seasons are favorable to the growth of the *Erysiphe* fungus. Although a hundred foreign vines were exposed to the *Oidium* in the same graperies, very few were affected by it during the last season; and it is observed that the mildew is confined to certain varieties. The black Hamburg, for example, was not affected at all by it, although growing side by side with mildewed vines. The green wood is always more injured by the *Oidium* than the ripe; consequently, as some varieties of vines ripen sooner than others under the same conditions, so the green branches of the later varieties will probably be more affected than those of the early. It was shown by my paper on the fungus of the American grape-vine, in the Annual Report of the Department for 1871, that the early spring leaves of American grape-vines are not affected by the mildew (*Peronospora viticola*) during the summer months, under ordinary conditions, although the leaves that sprout in summer, particularly during rainy weather, when sappy and of a very light-green color, are very liable to be affected with the mildew, particularly some varieties.



In the fall of 1872 I selected several vine-leaves from the foreign Department grapery, having on their surface patches of mildew intermixed with perithecia of the *Erysiphe Tuckeri*. Having removed portions of them, I placed them on glass slides and secured them in position with gum-water, over which I placed a thin glass disk. While viewing them under a power of about 100 diameters I applied pressure on the disk in order to burst the perithecia. I used great care in my manipulation, but failed to get sporangia out of them. I then laid the leaves aside until November, 1874. In consideration of recent successful experiments on perithecia of black-knot fungus, I resumed my experiments on those of the foreign grape-vine mentioned. I removed a small portion of the leaves procured in 1872, containing the perithecia, placed it in a capsule and poured over it concentrated ammonia with the view of softening its albuminoid matter. To another portion I added nitro-muriatic acid and neutralized the acid by ammonia. This latter method has the advantage of bleaching the perithecium, which is naturally opaque, but when partially bleached is of a translucent Vandyke-brown color. Under either treatment the perithecia become soft and pliable, and the proper degree of pressure may be given during the operation while viewing them under the microscope. In this way I have succeeded in bursting them and forcing out their sporangia in perfect form. I had previously failed in this experiment, probably for the reason that the sporangia had not matured sufficiently, and in consequence of the thinness of their cell-walls they burst with slight pressure, and a grumous mass was all that I obtained. The sporangia of perithecia of *Microsphaeria* are easily removed and seem to bear more pressure without breaking the cell-walls of the sporangia than those of the vine, judging from my experience thus far.

During the last four years I have examined many hundreds of specimens of the *Oidium* form of the vine fungus, but in no case have I seen connected with them pycnidia, forms of a cell described and illustrated by Professor Amicé and Doctor Plomley, of Europe, and represented by them as connected in some way with the *Oidium*. I am certain, however, that I have found in great profusion, during the summer and fall of both 1871 and 1872, on the vines in our foreign grapery, the true fruit or perithecia of *Erysiphe Tuckeri*. The Rev. M. J. Berkley says:

It is true that the real sporangia of the vine mildew have not yet been observed. \* \* \* We do not doubt, therefore, that at some future period the true sporangia may be found, and we trust that the little parasite which has been of such unlooked-for importance may still preserve the specific name originally assigned to it, in honor of the meritorious cultivator who first observed it. \* \* \* It may, therefore, be named *Erysiphe Tuckeri*, and the name of *Oidium Tuckeri* should be rejected.

When Professor Planchon visited this Department last year, I prepared for him a microscope-slide containing specimens of the perithecia of *Erysiphe Tuckeri*, taken from a foreign vine of the Department grapery.

Should the climatic condition of the summer and fall of 1875 prove favorable for further investigation in this direction, I may be enabled to define more clearly the habits of *Erysiphe Tuckeri*, on a knowledge of which depends the proper remedies to be applied for its destruction and the consequent protection of the vine.

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## FACTS FROM OFFICIAL SOURCES.

AGRICULTURAL AND POLYTECHNIC INSTITUTES.—Mr. Lowndes, of Maryland, in January, 1874, introduced into the National House of Representatives, "a bill to aid in establishing agricultural and poly-

technic institutes in the several counties of the States and Territories, and the District of Columbia." The passage of this bill will be urged at this session. Section 1 appropriates \$5,000,000 to aid in the establishment of such institutes in every county or school-district at or near the capital town thereof. Section 2 requires the Commissioner of Education, under the direction of the Secretary of the Interior, to apportion one-half of the \$5,000,000 upon the basis of the entire population, and one-half in proportion to the number above ten years unable to write, as stated by the late decennial census. Section 3 awards a share in the apportionment to each State, Territory, or the District of Columbia, which shall by law provide for the establishment of such institutes, open to all actual residents, under reasonable and just regulations, in which instruction shall be given in such branches as "foster agriculture and manufactures, develop mining resources, and benefit commerce," under regulations devised by the Commissioner of Education, the Commissioner of Agriculture, and the Chief Signal-Officer. Section 4 makes each apportionment payable upon the warrant of the Commissioner of Education, countersigned by the Secretary of the Interior, to the State, territorial, or district officer authorized by law to receive it. Such officers are required to report to the Commissioner of Education, on or before the 30th of June next ensuing, a detailed statement of the moneys disbursed or still unexpended. The term "school-districts" includes cities, towns, parishes, or other subdivisions designated by law as competent to maintain institutions of learning. Section 5 requires the immediate apportionment and disbursement of each State, territorial, or district share; the portion derived from each half of the entire appropriation is to be locally distributed upon its own basis of distribution. Section 6 makes the embezzlement of these funds a felony punishable with a fine of double the amount embezzled, or imprisonment not exceeding three years. Section 7 gives the exclusive jurisdiction in such cases to the United States circuit courts, with power to compel by writ the performance of the duties specified, or to restrain their undue performance. Section 8 appropriates the \$5,000,000.

**AGRICULTURAL EDUCATION.**—At a meeting of the Highland and Agricultural Society of Scotland, held in June last, it was resolved to memorialize the government in behalf of agricultural education. Among other reasons for affording the working-classes of the country special instruction in the sciences bearing on agriculture, and their practical application, it was urged:

That in times past crops were raised and stock reared by the operation of very simple and primitive processes. In the present age the implements required by farmers depend on ingenious and complicated mechanical contrivances. Not only for the construction, but for the management and working of these implements, a knowledge of mechanics is required. The fertility of the soil needs to be stimulated by artificial compounds, which must be prepared with special reference to the nature both of soils and crops. The stock bred and fed on farms must obtain particular treatment, so as to insure production of good meat in a short time and at small expense. All these processes depend more or less on a knowledge of mechanics, chemistry, and physiology. The most important recent improvements in agriculture have been made by persons versed in these sciences.

That with this view, your memorialists ask that the grants of the department shall be declared to cover instruction in chemistry, mechanics, physiology, botany, morphology, steam, and other scientific subjects, when taught in the abstract, in so far as necessary for agriculture; and also to cover instruction given in the principles of agriculture as an applied science, and to place it in the same position as machine construction, applied mechanics, the principles of mining, and navigation, which are already included in the list of scientific arts toward instruction in which aid is given, and in which examinations are carried out by the department.

The society have since received a reply to their petition from "the lords of the committee of council on education," in which it is stated



that while their lordships are disposed to accede to the request contained therein, it is too late now to include for this year the science of agriculture in the list of subjects toward instruction in which aid is granted by this department. The case is, therefore, reserved for future but early consideration." In the mean time this committee call attention to the fact that the branches which must be the foundation of any course of instruction in agriculture are already aided, both in elementary schools and in the department of science and art :

**EXPERIMENTS IN AGRICULTURE.**—The following is an abbreviated statement of experiments and their results, conducted by Dr. E. M. Pendleton, professor of agriculture in the Georgia State College of Agriculture and the Mechanic Arts, as reported by him at the semi-annual meeting of the Georgia State Agricultural Society :

*Wheat, broadcast and drilled:* Sown the 1st of November, plats 1 and 2, side by side, on poor land of equal fertility, without manure; plat 1, broadcast, at the rate of 2 bushels per acre, through mistake, only 1 bushel being intended. But as about half, before it was well rooted, was killed out by the first cold spell, it only "stood about as thick as from one bushel of seed." In preparing plat 2 for the drill, the soil was thrown up in sharp ridges by running parallel furrows about 15 inches apart. As the seed at the rate of one-half a bushel to the acre was sown, the most of it fell into the furrows between the ridges. By splitting the latter with a bull-tongue, the remainder was thrown in, and the whole covered "beautifully." In March, when the wheat on this plat was in the joint, a single furrow was run between each two rows by a subsoil-plow. "The helve of this plow, being a bar of iron, threw up no dirt on the wheat, but answered the double purpose of draining the land and opening it that the atmosphere might penetrate, and thus prepare additional food for the plants. The good effect was very perceptible." The variety sown was Tappahannock. The broadcast yielded at the rate of 414 pounds, or 6.09 bushels, of wheat, and 836½ pounds of straw, per acre; the drilled at the rate of 517.5 pounds, or 8.62 bushels, of wheat, and 812 pounds of straw. The professor, assuming that the proportion of seed per acre required is, for the broadcast one bushel, and for the drilled one-half bushel, and that it is sown on land equivalent to that on which the experiment was made, reckons as compensation for the additional labor, before harvesting, in the drilling process, as follows: besides a gain, on a field of 10 acres, of 31.5 bushels of wheat, "for every bushel of grain made on the broadcast system there is carried off 137 pounds of straw, while for the same amount of grain when drilled there is carried off 99 pounds of straw. This, then, involves considerably more labor in cutting, hauling, and thrashing for the same amount of grain obtained, and takes off about 35 per cent. more of the valuable substances making up agricultural plants."

Plat 3, fertilized with 300 pounds, per acre, of ammoniated superphosphate in the drill, with one-half bushel of seed, yielded at the rate of 724.5 pounds—12.07 bushels—of wheat, and 979 pounds of straw, per acre. The fertilizer cost \$9.75; gain in wheat over that without a fertilizer, 3.45 bushels.

Plat 4, with the same treatment, except that the seed was doubled, yielded exactly the same amount of wheat, but 80 pounds more straw, per acre.

Plat 5, with 300 pounds per acre of superphosphate and 1 bushel of seed in the drill, produced at the rate of 700 pounds—11.67 bushels—of



wheat, and 1,043 pounds of straw. Cost of the fertilizer, \$7.50; gain in wheat, 3 bushels.

The professor infers that when the farmer gets back in the first crop the cost of commercial fertilizers, it pays well to use them, "because there is left in the soil insoluble phosphates, lime, sulphur, and organic nitrogen, which will doubtless pay for the fertilizer the second year on most soils."

*Oats*.—Sown on the 18th of December, 1½ pounds of seed, a yellow Georgia variety, with 500 bushels of home-made manure put in at the time of sowing. Product, 29½ bushels of oats and 1,275 pounds of straw; cost of production, \$14.25; value of the products, \$33.69; net profit per acre, \$19.44.

*Cotton*.—With a view to test the effects of organic matter on growth, one flower-pot was filled with river-sand, out of which all soluble matter had been washed; another with such sand mixed, half and half, with rotten wood, (though not fully decomposed.) The same fertilizer, in equal quantities, was added to both, and a plant of cotton grown in each. At the date of report, (in August,) that in pure sand, compared with that in sand mixed with rotten wood, was "much smaller and less vigorous, the leaves having a paler and more sickly aspect, with just one-half the number of forms, (6 to 12,) and wilting much sooner from the lack of water." Again, in the autumn of 1873, 200 pounds of green weeds were put in a row 70 yards long, and covered with a turning-shovel; another 200 pounds were burned, thus dissipating the organic matter, and the ashes covered in a row of the same length. Last spring cotton was planted in both; at date of reporting that on the weeds had "the appearance of being treated with 200 pounds of a good fertilizer," while that on the ashes of weeds appeared to have received scarcely any benefit from them.

**WHEAT-IMPORTS OF GREAT BRITAIN.**—The following is the official statement of the quantities and value of wheat and wheat meal and flour imported into Great Britain for the nine months ending September 30, 1874, accompanied by a statement of the total value, and value per hundred-weight, in our currency.

Countries.	1874.			
	Cwts.	Value.	Value.	Value per cwt.
<b>WHEAT.</b>				
From Russia.....	3, 374, 915	£2, 037, 021	\$10, 185, 105	\$3 02
Denmark.....	123, 955	81, 109	405, 545	3 27
Germany.....	2, 004, 563	1, 435, 270	7, 176, 350	3 58
France.....	233, 258	133, 233	666, 165	2 85
Austrian territories.....	1, 047	810	4, 050	3 87
Turkey, Wallachia, and Moldavia.....	453, 863	272, 095	1, 360, 475	3 00
Egypt.....	291, 990	171, 123	855, 615	2 93
United States.....	18, 387, 344	11, 756, 222	58, 781, 110	3 20
Chili.....	1, 682, 006	1, 052, 742	5, 263, 710	3 13
British North America.....	2, 868, 736	1, 741, 778	8, 708, 890	3 03
Other countries.....	2, 313, 977	1, 495, 551	7, 477, 755	3 23
Total.....	31, 735, 654	20, 176, 954	100, 884, 770	3 18
<b>WHEAT MEAL AND FLOUR.</b>				
From Germany.....	556, 669	546, 575	2, 732, 875	4 91
France.....	298, 307	309, 526	1, 547, 630	5 19
United States.....	2, 720, 173	2, 475, 181	12, 375, 905	4 55
British North America.....	335, 105	290, 767	1, 453, 835	4 34
Other countries.....	957, 125	974, 290	4, 871, 450	5 09
Total.....	4, 867, 379	4, 596, 339	22, 981, 695	4 72

The average value of United States wheat differs little in the last three annual statements. Taking the same periods of nine months, the averages of the past three are respectively \$3.14, \$3.23, and \$3.20. The highest price is for wheat of the Austrian territories.

**BRITISH IMPORTS OF NEW WHEAT.**—Since the wheat-harvest in Great Britain the imports of flour have been over 5,000,000 quarters, the estimated wants of this kingdom being from 8,000,000 to 9,000,000 quarters. At the same rate of arrivals it is estimated that within five months after harvest much the largest part of the requirement for the year will be imported, leaving only 3,000,000 to 4,000,000 quarters for the remaining seven months.

**PROGRESS OF THE COTTON-MANUFACTURE.**—The following figures, collected under the direction of the late secretary of the Cotton-Manufacturers' Association, illustrate the present status of that important interest:

States.	Number of mills.	Number of looms.	Number of spindles.	Average size of yarn.	Average running-time.	Average consumption of cotton per spindle.	Quantity of cotton used.	
NORTHERN.				No.	Weeks.	Pounds.	Pounds.	Bales.
Maine .....	24	12, 415	609, 898	25. 23	50. 71	59. 67	36, 473, 547	78, 607
New Hampshire .....	42	20, 422	855, 189	23. 43	51. 46	69. 89	59, 759, 468	128, 792
Vermont .....	10	1, 274	58, 948	29. 75	46. 34	46. 34	2, 734, 167	5, 895
Massachusetts .....	194	71, 202	3, 769, 692	28. 55	49. 89	53. 93	203, 325, 299	438, 201
Rhode Island .....	115	24, 706	1, 336, 842	35. 20	48. 10	43. 51	58, 146, 985	125, 317
Connecticut .....	104	18, 170	908, 202	31. 40	48. 45	53. 43	48, 514, 613	104, 557
New York .....	55	12, 476	580, 917	32	47. 70	42. 22	24, 536, 249	52, 880
New Jersey .....	17	2, 070	150, 968	29. 30	51	53. 50	8, 078, 647	17, 411
Pennsylvania .....	60	9, 772	452, 064	17. 51	42. 80	84	37, 989, 726	81, 872
Delaware .....	8	796	47, 976	22. 24	49. 66	66. 14	3, 174, 174	6, 841
Maryland .....	21	2, 299	110, 260	11. 50	47. 35	174. 34	19, 222, 703	41, 438
Ohio .....	5	236	20, 410	11. 83	36. 80	89. 48	1, 826, 304	3, 936
Indiana .....	4	618	22, 988	14. 56	47. 44	159	3, 671, 227	7, 912
Minnesota .....	1	24	3, 400	3	52	99. 41	338, 000	728
Total northern...	660	176, 480	8, 927, 754	28. 56	49. 33	56. 86	507, 790, 099	1, 094, 387
SOUTHERN.								
Alabama .....	16	1, 360	57, 594	10. 50	48. 37	112. 83	6, 490, 079	13, 772
Arkansas .....	2	28	1, 256	12	51	121. 69	136, 000	293
Georgia .....	42	2, 934	137, 330	12. 71	47. 77	133. 57	18, 522, 899	39, 920
Kentucky .....	4	42	10, 500	6. 26	49. 24	178. 86	1, 878, 020	4, 047
Louisiana .....	3	300	15, 000	12	47. 02	86. 31	1, 294, 560	2, 790
Mississippi .....	11	348	15, 150	11. 33	39. 29	75. 17	1, 138, 804	2, 545
Missouri .....	4	382	18, 656	10. 75	49. 66	183. 25	3, 481, 573	7, 288
North Carolina .....	30	1, 055	55, 498	12. 08	46. 52	123. 10	6, 832, 673	14, 726
South Carolina .....	18	1, 238	62, 872	13. 36	39. 67	113. 25	7, 134, 558	15, 376
Tennessee .....	42	1, 014	47, 058	12. 32	51. 10	133. 38	6, 272, 458	13, 518
Texas .....	4	230	10, 225	12	47. 02	127. 80	1, 278, 125	2, 755
Virginia .....	11	1, 564	56, 490	16	47. 57	95. 23	5, 334, 025	11, 496
Total southern...	187	10, 495	487, 629	12. 50	47. 02	122. 53	59, 793, 774	128, 526
Grand total .....	847	186, 975	9, 415, 383	27. 73	48. 26	60. 29	567, 583, 873	1, 222, 913

**STATISTICS OF A FLOCK OF SHEEP IN TEXAS.**—Our correspondent in Waller County furnishes the following statistics of his flock for seven consecutive years. He states that the sheep have been penned at night, but have received no other attention, not being fed or sheltered from cold in winter.

Date of shearing.	Sheep.				Wool.				Value of total products.	Lambs marked.			
	Ewes.	Wethers.	Rams.	Total.	Average per head.	Total.	Price per pound.	Total value.		Ewes.	Wethers.	Rams.	Total.
	No.	No.	No.	No.	Lbs.	Lbs.	Ots.			No.	No.	No.	No.
March, 1869.....	292	96	16	404	2.7	1,089	18 <sup>7</sup> / <sub>8</sub>	196 02	\$196 02	49	47	1	97
May, 1870.....	294	105	5	404	3.3	1,327 <sup>5</sup> / <sub>8</sub>	19	252 22 <sup>1</sup> / <sub>2</sub>	448 24 <sup>1</sup> / <sub>2</sub>	104	108	....	212
September, 1870.....	412	210	4	626	1.8	1,140	18 <sup>1</sup> / <sub>2</sub>	210 90	659 14 <sup>1</sup> / <sub>2</sub>	....	....	....	....
May, 1871.....	332	133	4	459	2.5	1,145	24	160 30	819 44 <sup>1</sup> / <sub>2</sub>	....	....	....	....
May, 1872.....	341	164	9	514	3.2	1,653	37 <sup>3</sup> / <sub>8</sub>	623 31	1,442 75 <sup>3</sup> / <sub>8</sub>	74	56	9	139
May, 1873.....	221	98	6	325	2.5	837	18	150 66	1,593 41 <sup>1</sup> / <sub>2</sub>	30	30	....	60
May, 1874.....	232	72	6	300	2.6	805	24 <sup>1</sup> / <sub>2</sub>	197 22	1,790 63 <sup>1</sup> / <sub>2</sub>	75	93	2	170

**SHEEP-HUSBANDRY IN TASMANIA.**—The sheep of Tasmania are developing qualities as fancy breeds which are now bringing high prices in the market. A careful selection of breeding-stock, great care of flocks, and very favorable climatic conditions are claimed as special advantages for this industry. Some pure Leicester ewes sold in Melbourne lately as high as £21 10s. per head. A pure merino ram, "one of the grandest sires in the colonies," brought the astonishing price of £714. A flock of 26 stud rams, the progeny of the last-named, averaged £53 per head.

**EXPERIMENTS WITH FERTILIZERS.**—Our correspondent in Windham, Conn., thus states the results of his experiments with different preparations of bone as a fertilizer: No. 1 was a celebrated brand of pulverized bone, which appeared to be rich in ammonia, but it was the least valuable kind experimented with. No. 2 was a common crushed bone converted into superphosphate by sulphuric acid. This caused a luxuriant growth in the fore part of the season. No. 3 was crushed bone mixed with two parts of ashes; the mixture, after being thoroughly wet, was allowed to stand two weeks before using. It was not so effective in the fore part of the season, but after harvest its effect was as great, if not greater, than any other. It is also the cheapest manure, not costing more than half as much as the others, and fully equaling their efficiency.

Our correspondent in Elk, Pa., states that a farmer there raised 500 bushels of corn from two acres of land which had received a good coat of lime. This has "turned the heads of half the farmers in the neighborhood." Bushels of ears are doubtless meant.

**GUANO-DEPOSITS OF PERU.**—The results of late measurements of guano-deposits upon several Peruvian islands are stated by the South Pacific Times, as follows: Chiapa, 89,000 cubic meters; Huanillos, 700,000; Punta de Lobos, 1,601,000; Pabellon de Pica, 5,000,000; Patache, 125,000; Chavanoja, 150,000; Patillos, 16,000. Each cubic meter will yield from 2,866 to 2,976 pounds. Many other islands, smaller than the above, present a very considerable aggregate. Specimens of several of these deposits have been analyzed by order of the Royal Agricultural Society of England, upon which Dr. Voelcker remarks, that those of Pabellon de Pica are very dry, of a clear brown color, and approximating the best guanos of the Chincha Islands. Their alkaline salts vary from 9 to 23 per cent., with a greater or less proportion of marine salts. Those of Punta de Lobos contain a large quantity of sand, amounting, at 8 feet depth, to 28 per cent.; the proportion of nitrogen, however, is very small, 2.6 per cent. The last ingredient, however, varies at different depths, amounting to 6 <sup>1</sup>/<sub>2</sub> per cent. at 5 feet, and to 10



per cent. at 40 feet, where the guano is fine and still drier than that of Guanape, and contains as small a proportion of sand. The guano of Huanillos is very dry, pulverulent, and of clear brown color; the proportion of nitrogen varies from 7 to 10 per cent.; sand, from 2 to 6 per cent. Several specimens were rich in phosphate of lime, but poor in nitrogen. Alkaline salts are present in large proportions, varying from 16 to 20 per cent. in some deposits. The proportion of nitric acid ranges from .01 to 2.9 per cent. Nitrate of soda is probably due to the nitrogen of large organic portions of the large deposits exposed for a long time to the action of atmospheric oxygen, and also to the action of sea-water. These researches lead to the expectation that large deposits of nitrate of soda will yet be discovered in the south of Peru. Dr. Voelcker thinks the variable character of these deposits renders it necessary to carefully examine each cargo imported. The English Royal Society has petitioned the government to press the Peruvian government to institute a standard analysis guaranteeing a stated medium of nitrogen and phosphoric acid, and of regulating prices accordingly.

ENGLISH AGRICULTURAL STATISTICS.—The British Board of Trade has returns showing the following areas under culture in 1874: Wheat, 3,632,063 acres; barley, 287,983 acres; oats, 2,596,367 acres; potatoes, 520,428 acres; hops, 65,824 acres; the last-named crop shows a considerably increased acreage, but barley and oats have decreased. The live-stock returns embrace 6,125,505 head of horned cattle of all grades in the British Isles; 30,313,949 sheep, and 2,422,834 swine; the first two show an increase, and the third a decrease, compared with 1873.

CINCHONA IN CEYLON.—The experiment with cinchona in Ceylon, as in India, is still continued successfully. The original design of the Ceylon government was to grow plants only for free distribution, on the condition that they be planted and cared for. At first it was difficult to get planters to accept of them with this proviso; but the success of the first trials was such that, for the last two years, it has been difficult for the gardens at Hakgalla to keep up with the demand at the price, first, of 5 and, latterly, of 10 rupees per thousand. The latter price has been paid even for unrooted cuttings. The greater demand has been for the *succirubra*, (red bark,) which large-leaved species thrives well every where, side by side with coffee. This is the favorite, not because it is the best, but because it is the best grower and suited to a lower elevation, 3,000 feet being the minimum for the production of the alkaloid in sufficient quantity, while *officinalis*, *calasaya*, and other crown barks require an elevation not lower than 4,000 feet, furnishing an even quantity of alkaloid at all higher elevations than 6,500 feet, below which the quantity is less, and the resin of the bark becomes as troublesome as in the red bark. Though cinchona trees, like most others, flourish best under conditions of abundant sunlight, yet repeated experiments have conclusively proved that the quality of the bark can be greatly improved by shielding it from the direct influence of the sun's rays. The formation of injurious resinous and coloring matter, most difficult of separation from the valuable qualities, seems to be in proportion to the influence of direct sunlight. Planting the trees very thickly, and then pruning judiciously, goes far toward securing the benefits without the disadvantages of shade, the most favorable condition for the production of quinine being "that the leaves should be well exposed to the light while the stem-bark is shaded from the direct action of the sun." A Mr. McIvor has adopted a mossaing process, which completely secures all

the advantages of excluding the bark from the sun's rays, while it enables the cultivator to obtain several crops of bark from the same growing stem. Mr. McIvor thus describes his process:

Two parallel cuts should be made down the stem, at the distance apart of the intended width of the strip of bark; this done, the bark is raised from the sides of the cut and drawn off, beginning at the bottom; care being taken not to press or injure the sappy matter (*Cambium*) left on the stem of the tree. This *Cambium*, or sappy matter, immediately granulates on the removal of the bark, and, being covered, forms a new bark, which maintains the circulation undisturbed.

With a view to show that scientific cultivation may modify the bark so as to increase largely the valuable alkaloids and sulphates, and at the same time decrease the resin and other objectionable matter, Mr. Broughton, chemist, employed by the Madras government, made the following experiment: After taking samples of the bark of two trees, as it grew in the natural state, he covered the bark on one with a shield of tinned plate, and on the other with cloth. Analyses showed the following results: Bark from the tree covered with plate, before covering, quinine, 2.16; cinchonidine and cinchonine, 3.13; total alkaloids, 5.29; covered ten months, quinine, 1.65; cinchonidine and cinchonine, 6.45; total, 8.10. From the tree covered with cloth, before covering, quinine, 2.26; cinchonidine and cinchonine, 2.78; total, 5.04; covered six months, quinine, 2.03; cinchonidine and cinchonine, 4.88; total, 6.91; covered ten months; quinine, 2.34; cinchonidine and cinchonine, 5.58; total, 7.92. Mr. Broughton states: "The alkaloid was obtained crystallized with nearly the same readiness as in mossed bark. The amount of quinine, however, has not been increased as in the case of mossing. This is a circumstance which I did not expect, and it is opposed to deductions from other experiments." He thinks that the reason for non-increase of quinine may be that the black cloth and tinned plate did not shield from the heating effect of the sun's rays as did the moss. He also gives the result of a new analysis, which makes the amount of quinine in bark (of *Succirubra*) sixteen months under moss, 4.02; and the same renewed, under moss for the same time, 3.87. The old bark, however, was sixty-six months old.

To show the comparative value of different varieties, analyses of two kinds of bark produced in Ceylon are given. The first, *Officinalis*, (believed to have been subjected to the mossing process,) gave sulphate of quinine, 3.93; quinine uncrystallized, 2.41; cinchonidine, .51; cinchonine, .28; total, 7.13. The second, *Succirubra*, from trees grown in the open garden at Hakgalla, gave, sulphate of quinine, 2.35; quinine uncrystallized, .95; cinchonidine, .11; cinchonine, .58; total, 4.99.

§ CINCHONAS IN INDIA.—Dr. Edward Nicholson, of the Anglo-Indian army, informs *Le Journal de Thérapeutique* that the culture of this precious bark is rapidly increasing in India. In the presidency of Madras alone the product of cinchona bark, up to July 31, 1873, was: *Cinchona succirubra*, 1,215,963 superficial feet; *C. officinalis*, 4 varieties, 1,284,743 feet; *C. calisaya*, 2 varieties, 54,881 feet; other species, 93,346 feet. During the second quarter of 1873 these plantations furnished for the manufacture of alkaloids of Madras 11,164 lbs. of green bark from the trunk; 30,089 lbs. of green bark from the branches; 2,597 lbs. of renewed bark. There were exported to England 23,699 lbs. of dried bark, making the product of three months 67,485 feet, giving an estimated product of alkaloids amounting to 3,376 pounds. Dr. Nicholson estimates the total product of India at over 200,000 pounds of bark.

RAIN ON THE PACIFIC COAST.—Rain on the Pacific coast has set in earlier than usual. In the month of October it fell at Sacramento to

the depth of  $2\frac{1}{4}$  inches, which was more than in the same month in any year since 1858, when  $3\frac{1}{10}$  inches fell. The next highest amount was in 1869,  $2\frac{1}{2}$  inches. In San Francisco the United States signal-service report that in the twenty-four hours ending at 8 p. m., November 23,  $4\frac{7}{10}$  inches fell. Rain has been general in the interior. At Yreka, it is claimed that  $7\frac{3}{4}$  inches fell during one storm in November, making a total of  $14\frac{1}{2}$  inches for the month, and of 20 inches for the season.

**INFLUENCE OF TREES ON RAIN-FALL AND CLIMATE.**—At a recent meeting of the Scottish Arboricultural Society, a report was made by Mr. Buchan, secretary of the Scottish Meteorological Society, of experiments on rain-fall at Carnwath. "The forest selected contained about 62 acres, and a little outside, to the northwest, was a green knoll quite clear of trees. In the interior of the wood, and 320 yards distant, was another knoll of precisely similar character. Immediately on the top of the western slope of this knoll was a bare patch about 50 feet in diameter, and this was surrounded on all sides with trees of various sorts, varying from 40 to 50 feet in height. The growth of the green sward and of the plants around showed that the situation was well fitted for the inquiry." Two sets of meteorological instruments, exactly alike, were placed, one on each knoll, at exactly the same elevation above the ground. Observations were begun on the 16th of September, 1873, and continued to the end of October, 1874. "The precise points to be elucidated were the temperature and the condition of the atmosphere as regards moisture outside the wood as compared with the interior of the wood." In the interior, the highest temperature was  $79^{\circ}.4$ ; the lowest,  $19^{\circ}$ ; range  $60^{\circ}.4$ ; on the outside, during the same days as the preceding) the highest,  $78^{\circ}.1$ ; the lowest,  $19^{\circ}.8$ ; range,  $58^{\circ}.53$ . The mean of all the maximum day-temperatures at the station within the woods was  $52^{\circ}.2$ ; on the outside,  $51^{\circ}.7$ ; of all the minimum day-temperatures in the interior,  $38^{\circ}.8$ ; on the outside,  $38^{\circ}.7$ . The means of night-temperatures were very nearly identical at both stations during the whole period of observation; except in June, the difference was never more than a fifth of a degree, but for the days of maximum temperature, the averages showed an excess of half a degree in favor of the station inside.

The remarkable result disclosed during the annual rise of temperature in the spring and summer months was, that in the inside of the wood the temperature was two degrees higher than on the outside, while during the annual fall of temperature in the autumn, the temperature of the day inside of the wood was in the mean half a degree lower than on the outside.

In respect to moisture, the results were as follows: The average dew-point, at 9 o'clock in the morning, was, at the interior station,  $42^{\circ}.5$ ; at the exterior,  $42^{\circ}$ ; at 9 in the evening, respectively,  $42^{\circ}.2$  and  $40^{\circ}$ . In the month of August the dew-point at the interior was, on the average,  $1^{\circ}.8$  higher than at the exterior.

**FORESTRY AND DEFORESTING IN CEYLON.**—A writer in the Ceylon Oberver, from facts in the official report on the forest department of the Madras presidency, concludes that the rainfall would be equally abundant, on the tops of mountains 4,000 to 8,000 feet high, if there were no trees higher than coffee, tea, or cinchona shrubs. He states further that all observation and experience in Ceylon tends to prove that the substitution of coffee-bushes 4 feet, for forest-trees 40 or 60 feet high, on elevated lands, will not be followed by a diminution of rainfall in the slightest degree. Those who clear away every tree from their land inflict great injury on their own interests and those of the country, not because they diminish the rain-fall. but because from such



land the rains run off more rapidly, the moisture is sooner dissipated from the surface, and there is no vegetable deposit from leaves and decayed wood for enriching lower lands.

**FOREST PROTECTION IN RUSSIA.**—The Moscow Gazette, in commenting upon a correspondence from the provinces of the Vistula, predicts that if the wholesale destruction of timber be not placed under effective limitations within the next quarter century, that finely-wooded region will become an arid plain. Volhynia, in which formerly 42 per cent. of the land was forest, now contains but 25 per cent. Riga will soon lose its character as a timber-exporting point. Renza has reduced her forest area from 35 per cent. to 20 per cent. of her surface. Other provinces show a similar tendency. These complaints are re-echoed by the other leading journals of the empire. The danger of injurious denudation of forest areas has attracted the attention of the leading agricultural societies, and the impression is gaining ground among all classes of the people that prompt action must be taken by the government to avert the injurious consequences of a general destruction of forests.

**EXPORT OF HORSES FROM FRANCE.**—Horses were exported from France, in the first nine months of 1874, to the value of \$3,000,000. They included 5,217 mares, 536 stallions, and 11,959 geldings. The exports for the corresponding period in the two previous years were: 1873. Mares, 4,957; stallions, 616; geldings, 12,990. 1872. Mares, 4,265; stallions, 992; geldings, 7,126. They are exported principally to England, Belgium, and Germany.

**BARLEY VERSUS WHEAT.**—The Mark Lane Express, in reporting that the best malting barley, for the first time, sells in the British market at a higher rate than the best red wheat, says that "a very remarkable change is about to take place in the history of agriculture, consequent on the change in the value of English wheat and barley." Reckoned by measure, barley is quoted at 48 shillings, and wheat at 46, per quarter; by weight, (barley being 7 pounds per bushel lighter than wheat,) while 456 pounds of barley bring 48 shillings, 456 pounds of wheat bring only 41.

**PROGRESS OF AGRICULTURE IN VICTORIA.**—The Department of Agriculture in Victoria, Australia, has published its second annual report. The volume is described as "an exact counterpart" of those issued by this Department. It reports results of investigations with respect to the state of crops, the cultivation of special plants, (including flax, the grape, and native grasses,) diseases of cattle and sheep, injuries of birds and insects, characteristics of different soils in the colony, &c. The Department is furnished with a chemist and an entomologist, who report on their specialties. Agricultural education is largely discussed, and a sketch of all the principal agricultural schools and colleges in Europe and America is given. It is also reported that the Department is about adding to its own facilities an experimental college and farm.

**STEAM CULTIVATION.**—The following statements are gathered from a letter written by an experienced cultivator, at the request of Sir William Cunningham, M. P., and read at a recent meeting of the Carrick Farmers' Society, Scotland. The writer began to cultivate by steam, in 1861, with a "roundabout set of tackle; that is, with rope and anchor at each end of the field, and one engine." The next year he procured a 14-horse power engine and tackle, and in 1864 another. These two en-

gines have worked regularly up to the present, not only on level ground, but on hill-sides, and are now in a more efficient state than when new.

Experience has enabled the writer to surmount such difficulties as keeping the water in the boiler while moving on steep hill-sides, signaling from one engine to the other over intervening hills, the sinking of engines in miry ground, &c. He has added to his steam-force "a traction-engine for conveying dung to the fields, and carrying stones and wood and other work on the estate." He also says: "I have successfully brought into use on my farms a combined harrow and roller, and expect to be able to turn out a drain-plow, to cut drains  $3\frac{1}{2}$  to 4 feet deep, at a cost of only a few shillings per acre. The greatest advance, however, that I have made is by the purchase of two 20- (nominal) horse power engines for the purpose of knifing or subsoiling to a depth of from 2 to 3 feet."

Illustrating the economy of steam-cultivation, he states:

Taking the present price of horses at £75 per horse, harnesses, plows, and implements at £300, makes a saving in stocking a farm of £1,650, or within a little of the cost of a double set of engines, with tackle complete, costing £1,800. The higher wages of the engine and plow drivers, with the amount paid for coal and oil, will bear no comparison with the keep of horses; besides, when the engines are idle they do not eat. The wire-rope on clay-land lasts five years. Put the cost of repairs, at the outside, at £70 or £100 per annum, which is much less than blacksmiths' bills and the tear and wear of horse-flesh and implements, &c.

**CO-OPERATIVE LAND MOVEMENT.**—A law recently passed by the British Parliament provides that any industrial and provident society, registered under the act, "shall have power to purchase, erect, and sell and convey, or to hold land and buildings." A paper read before the statistical society in June last by Mr. E. W. Brabrook, reports results as follows: Up to November 18, 1873, thirty-three societies had been registered under the act, organized for the sole purpose of buying and selling land. From these recently-formed societies, with a single exception, no returns of results are as yet available; but many of the ordinary co-operative societies have registered for the same purpose, and returns to the registrar of friendly societies for the year 1872 show that under the act above mentioned buildings and lands had been purchased as an investment, or to sell again, to the value of £231,788, or 13 per cent. of £1,792,967, the total assets.

**ALGERIAN AGRICULTURE.**—The French province south of the Mediterranean embraces a large belt of cultivable land, stretching along the coast and protected from the hot blasts of the desert by the Atlas Mountains, with sides well wooded, and summits capped with snow. Here about 30,000,000 of acres, a surface 20 per cent. greater than that of Ohio, is capable of cereal culture, but not over a third is actually occupied. The migratory natives, indisposed to assume the care and responsibility of cropping, are still available in sufficient numbers in the heavy labors of harvest. Plowing and sowing take place in October. Heavy April rains insure a good crop even with the imperfect methods of culture in use. The plow is a wooden share, unshod with iron, such as is used in Spain and Provence. The grain is reaped by hand and trodden out by cattle, after which it is winnowed by the winds of heaven. It is mostly the *Triticum durum*, or hard wheat of the country, which is highly esteemed for the manufacture of maccaroni, vermicelli, &c. Its large proportion of gluten makes a flour very profitable to the baker, as it absorbs large quantities of water. Barley is grown in the place of oats, either as a forage-crop or a grain-crop. It supplies the breadstuffs of the poorer classes. It is well adapted to malting. The most productive variety is the *Hordeum novusticum*.



The Atlas Mountains inclose large plateaus too elevated for crop-culture, but admirably adapted to grazing. This advantage is utilized in sheep-raising. Before the French conquest sheep husbandry was of little value to the Arab breeder, except for mere clothing and subsistence. Sheep began to bring from 2s. to 3s. per head until this cheap meat supply found its way to the Paris markets. Now sheep bring as high as 16s. to 20s. More than 20,000 sheep per month are sent from Algeria to France. There are two kinds of sheep in the province; one small with large tails, and a larger breed in the country of the Getulæ. The milk of sheep and goats is used by the poorer classes in making butter and cheese. The cattle are a black breed of inferior milking qualities. The stock of cattle averages annually about 1,500,000 head. The common beasts of burden are camels, dromedaries, asses, and mules. The horses are by no means of the pure Arab type, being lank and round-shouldered, but hardy, docile, and fleet. Those of Oran are the best. They are stabled in the family tent, and are only used for riding.

But stock-raising cannot compete with cereal culture, which finds an increasing demand for its surplus products. England alone could absorb the yield of this province, which, it is estimated, might be enlarged to 220,000,000 bushels of all sorts of grain per annum. A great effort is now being made by the French government to attract settlers from Alsace and Lorraine. The native tribes are unsuited to a civilized industry and unable to meet its demands for labor. Their physical and intellectual capacities and their boundless prejudices unfit them for steady and profitable employment. They are exceedingly awkward in handling all kinds of agricultural implements, and have too little desire for improvement ever to become valuable laborers. Civilized men find great difficulty in adapting their labor, and serious local results have frequently grown out of this misunderstanding, greatly retarding the progress of this country. Whether this new effort to colonize European civilization upon the African continent will be any better than its predecessors, is yet to be tested by its results.

**AGRICULTURAL PROPERTY IN ENGLAND.**—Mr. Snell, in a paper lately read before the Devon and Cornwall Chamber of Agriculture, stated that the tenant-farmers of England are assessed for income-tax upon a basis of £60,000,000 per annum, which is about half their rental. Small holdings, covering about one-seventh of the soil, were assessed upon £20,000,000, making the rental value of agricultural land about £140,000,000, or \$700,000,000. As it requires six years' rental to repay the tenant for his investment, the capital represented is over £800,000,000, or \$4,000,000,000, a sum exceeding the British national debt. Of the tenant-farmers a small proportion are protected by special stipulations in their leases, allowing them compensation for unexhausted improvements at the close. More than half the land of England is let to tenants-at-will, a relation which forbids very high farming. It presents constant temptations to superficial and exhaustive culture. There is no inducement to this class of tenants to invest any capital in permanent improvements, seeing that it is likely to be taken from them by a sudden eviction. While the landlord enjoys full legal protection for his property, the tenant has but a limited and precarious recourse. Anomalies of the landed system are annually becoming more serious in their operation upon the productive interest, and early legislation, reforming the system of tenure, the writer thinks, is of prime necessity. Mr. Joseph Arch, the great social reformer, declares that the English chambers of agriculture are worthless as protectors of tenant-rights, being overshadowed by the landlord interest.



**BRITISH MINERAL-PRODUCTION IN 1873.**—From the introduction to the annual returns of mineral-production, lately published by the keeper of mining records, it appears that the United Kingdom, during 1873, produced raw minerals to the value of £59,479,486. The leading items of this production were as follows: 127,016,747 tons of coal, worth £47,631,280; 15,577,499 tons of iron-ore, worth £7,573,676; 80,188½ tons of copper-ore, worth £342,708; 14,884¾ tons of tin-ore, worth £1,056,835; 73,500½ tons of lead-ore, worth £1,131,907; 15,969 tons of zinc-ore, worth £61,166; 58,924 tons of iron pyrites, worth £35,485; 5,448¾ tons of arsenic, worth £22,854; 8,671½ tons of manganese, worth £57,766; 6,368½ of ocher and amber, worth £5,410; 1,785,000 tons of fine and fire clay, worth £656,300; 1,785,000 tons of salt, worth £892,500. The metals obtained from the above ores are valued at £21,409,878, including 6,566,451 tons of pig-iron, worth £18,057,739; 9,972 tons of tin, worth £1,329,766; 5,240 tons of copper, worth £502,822; 54,235 tons of lead, worth £1,263,375; 537,707 ounces of silver, worth £131,077; 4,471 tons of zinc, worth £120,099, and other metals valued at £3,000. The total product of coal, metals, and non-metallic minerals is valued at £70,722,992, or over \$350,000,000, against £70,193,416 in 1872. The coal-product increased about 3,400,000 tons, but the iron-ore exportation declined over a million tons, necessitating a decrease in pig-iron production of 175,478 tons. Copper-ore also fell off 11,695 tons, and the metallic product 500 tons. All the other metals show a decline, except tin. The coal-product is the largest ever realized. The keeper of the mining records estimates that of the total product 12,712,222 tons were exported; 3,790,000 tons used on railways; 35,119,709 tons used in iron-manufacture; 763,607 tons in smelting other metals; 9,500,000 tons in mines and collieries; 3,650,000 tons in steam-navigation; 27,550,000 tons in steam-power manufactures; 6,560,000 tons in gas-manufacture; 650,000 tons in water-works; 3,450,000 tons in potteries, glass-works, &c.; 3,217,229 tons in chemical and other works; 20,050,000 tons in domestic consumption.

**SEWAGE-FARMING IN ENGLAND.**—Upon the sewage-farm of Lord Warwick, near Leamington, in England, twenty acres of mangel-wurzel (of two kinds, orange and intermediate globe) produced 82 tons to the acre, the crop being the greatest ever known in England. The field had been in Italian rye-grass in 1871 and 1872, and wheat in 1873. It received no manure other than sewage during the past four years. The mangel was sowed in rows, 2 feet apart, and the plants were thinned to 1 foot. The roots were so large that tons and tons were selected which did not exceed one hundred roots to the ton.

**FARM-ANIMALS IN ENGLAND AND WALES.**—The following table gives the totals of the several classes of farm-animals in England and in Wales, as shown by official returns, on the 25th of June, in 1873 and 1874:

Animals.	1874.		1873.	
	England.	Wales.	England.	Wales.
<b>HORSES.</b>				
Used solely for agricultural purposes .....	739, 221	69, 026	736, 530	69, 580
Breeding mares and unbroken horses .....	265, 177	54, 497	242, 482	50, 693
Total .....	1, 007, 398	123, 523	979, 012	120, 273

Animals.	1874.		1873.	
	England.	Wales.	England.	Wales.
<b>CATTLE.</b>				
Cows and heifers in milk or in calf.....	1, 614, 477	263, 616	1, 580, 912	259, 612
Other cattle not under two years old.....	1, 105, 773	125, 289	1, 051, 681	107, 064
Other cattle under two years old.....	1, 585, 290	276, 200	1, 541, 042	276, 151
Total.....	4, 305, 540	665, 105	4, 173, 635	642, 857
<b>SHEEP.</b>				
Not under one year old.....	12, 441, 794	2, 111, 069	11, 903, 391	2, 050, 297
Under one year old.....	7, 417, 964	953, 627	7, 261, 460	916, 565
Total.....	19, 859, 758	3, 064, 606	19, 169, 851	2, 966, 862
Pigs.....	2, 058, 781	213, 754	2, 141, 417	211, 174

**CORN IN MASON COUNTY, ILLINOIS.**—Our correspondent for Mason, Mr. William McDuffey, of San Jose, reported for October, as published, "Corn light and poor in quality." Mr. J. Cochran, of Havana, wrote to the Department, saying, "This is a very great error. The corn-crop of Mason County is *the best in quality ever grown and the largest in quantity*, with a single exception." This was forwarded to Mr. McDuffey, who replies, "My report is correct for an *average* of Mason County, notwithstanding Mr. Cochran's statement. I think he has more reference to corn produced in Fulton and Menard, on the bottoms of the Illinois and Sangamon rivers, (which corn is marketed at Havana,) than to that in Mason. Extra corn was produced in those counties on such lands this year; but I have nothing to do with that in my report. In this county, in one and perhaps two towns, where, in a common season, no corn could be raised, it was good; but in the remaining eleven towns it is poor, light, and chaffy. For the first time within my knowledge, our corn inspects in Chicago 'rejected.' Heretofore, so sure as our corn went to Chicago, it has inspected 'No. 1' or 'No. 2' always, but this season it is not so. Several fields in the county produced 12 bushels to the acre, but some not half of that. It was never lighter nor of so inferior a quality."

**MIXED HUSBANDRY IN GEORGIA.**—A correspondent in Taylor County reports that almost every farmer now plants wheat and oats, and, with proper fertilization and cultivation, finds it profitable. While unmanured land yields only 3 to 5 bushels of wheat per acre, manured yields 8 to 20. These wide extremes of yield are owing to different grades of fertilization and culture. With 50 pounds of Peruvian guano and 20 bushels of cotton-seed, mixed and drilled in rows 18 inches apart, and the seed-wheat drilled in the same rows, our correspondent raised 20 bushels per acre of good wheat, "on land that would not produce one bale of cotton to three acres." With the same treatment he raises 30 to 50 bushels per acre of oats. Rust-proof is the only variety he plants, which readily brings in market \$1 per bushel.

**MIXED HUSBANDRY SUPERSEDING COTTON-PLANTING.**—A correspondent in Lincoln County, Mississippi, reports as follows:

I make it a point to converse with every person I meet, whether white or black, to learn what he intends to do next year in the cotton business. The answer invariably is, "I intend to plant corn, oats, and other grain, if the seed can be had; also plenty of sweet-potatoes, and but little (and many say no) cotton." Judging from the pres-

ent feeling on the subject of cotton, the area in this county, also in Lawrence, Covington, Marion, Pike, Simpson, Copiah, and Franklin, will be very much reduced. Every one here says it is time we should begin to raise the wheat we consume at home.

**AGRICULTURAL HINDERANCES AND HELPS IN EAST TENNESSEE.**—In a communication from the secretary of the agricultural board of Sullivan County various discouragements and encouragements to agriculture in that section are set forth. Among the former are specified inveterate habits among farmers of skimming over as much as possible of land already exhausted without any attempts at increasing its productiveness; of letting the greater part of manure and other available fertilizers, which ought to be carefully saved and applied to the land, run to waste; and of resting contented with primitive and crude inherited modes of farming, without any disposition to learn and profit by modern improvements; a consequent disposition of the more enterprising among the rising generation to quit the farm and emigrate; laziness; one-horse gentlemen; speculators and kid-glove gentry; too many office-seekers; too many professional men, and other consumers who are not producers; and, lastly, too many dogs. "We have one of the best sheep-countries on the globe; but our people prefer to raise dogs, and the sheep are decreasing rapidly. On the other hand, a few are taking the necessary steps to increase the productiveness of their farms, and manufactures, in the train of which agricultural prosperity is sure to follow, are springing up. We have in our county several new factories, one cotton and one woolen factory at Bristol, and one just across the line, on the Virginia side. One cotton-factory at Union, on the railroad, ten miles below Bristol, is doing a fine business; and since the war a woolen-mill has been established in Carter, ten miles south of Union, which is also doing a prosperous business. Still another has gone up in Hawkins County, or on our county-line, which is largely patronized from four counties. Although we have no money, we are beginning to feel the effects of these improvements."

**HEDGES IN TEXAS.**—Our correspondent in Austin County calls attention to the gradual destruction of the timber and the inefficiency of the fence-laws. He thinks the *bois d'arc*, a native of Texas, is not remarkably available on account of ignorance of its culture and the depredations to which it has been subjected. A good, reliable hedge-plant is a desideratum.

**MINERAL WEALTH IN NORTH CAROLINA.**—Our correspondent in Stokes County says that the deposits of coal, iron, and lime in that region have attracted the attention of English miners. These minerals are plentiful and of good quality. Railroad communication within twelve miles.

**EXCELSIOR OATS IN OREGON.**—Mr. H. Shortridge, of Lane County, received from this Department, three years ago, a package of this variety of oats. From the seed of successive sowings he raised, the past season, a fair quantity, reported to be very heavy in yield and to weigh 50 pounds to the bushel.

**BENEFIT FROM SEED DISTRIBUTION.**—Our correspondent in Fulton County, Arkansas, reports that the two best varieties of wheat in that section, in respect to both yield and quality, are the Tappahannock and Fultz, the seed of which was received from this Department. He adds that the usual acreage in wheat was nearly doubled the past fall; that no complaint of the fly has been heard, and that, at the last of November, the growing crop never looked more promising.



**VITALITY OF SEEDS.**—Two years ago a few peas, in a very dry and hard state, were found in a sarcophagus containing a mummy, in the course of certain excavations going on in Egypt. The idea was conceived of testing the vitality of these peas, buried as they had been for thousands of years. Three of them were planted, which vegetated and produced enough to cover, in the year following, a considerable field. Some of the stalks grew to the height of more than six feet, and attained a size which was altogether extraordinary, and a strength which rendered them self-supporting. The flowers were white and rose-colored, and of delicious freshness. The pods were grouped on either side of the stalk, in a sort of circular zone toward the top, and not regularly distributed throughout the plant, as in the common pea. It is believed by those who have examined this ancient pea and tested its edible qualities that it belongs to the family of the ordinary pea of our gardens, but that it is a special variety distinguished by the characteristics above mentioned in regard to the form of the stalk and the disposition of the pods.

In corroboration of the fact that seeds will retain their vitality for an indefinite period when embedded deep in the earth, Professor Von Helldreich, of Athens, Greece, states that on the removal of the mass of slag accumulated in working the Laurium silver-mines, some fifteen hundred years ago, a quantity of a species of *glauicum*, or horn-poppy, has made its appearance; and, what is remarkable, it proves to be a new and undescribed species to which the name *glauicum serpieryi* has been given. Professor Niven, of the Hull Botanic Garden, England, in further corroboration of the same fact, mentions several instances of extraordinary vitality of seeds, from his own observation, and remarks that, "Doubtless the absence of air, an equable and unvarying condition as regards moisture and temperature, and above all the complete neutralization of the physical influence of the sunlight, constitute the means by which nature exercises a preservative power in seeds as astounding as it is interesting."

**DISEASE-PROOF POTATOES.**—A committee of the Royal Society of England reports that six varieties of potatoes entered for experiment as disease-proof, and planted in twenty trial-plots in different parts of the United Kingdom, have all failed to stand the test. The council had reserved a power to enforce a penalty of £20 in each case of failure, but the committee recommended that this penalty be not enforced. Professor de Bary, in a communication to the committee, claims to have ascertained definitely that this disease is not propagated by infected tubers. He recommends that potatoes be not planted near or after plants known to be suitable to the development of oospores of the *Peronospora infestans*.

**TEST OF SEEDS IN WASHINGTON TERRITORY.**—A correspondent in Waukiakum County reports that seeds received from the Department of Agriculture have proved very successful. "The flowers were splendid," and "the Victoria rhubarb had stalks an inch in diameter early in September. One mammoth pumpkin weighed 122 pounds."

**THE ROLLER AGAINST DROUGHT.**—Our correspondent in Stearns County, Minnesota, reports that while wheat generally averages about 14 bushels per acre the past season, his own averages 20, and is satisfied that the difference in his favor is mainly owing to a prevention of injury from drought by thoroughly rolling the land.

**THE WORLD'S PRODUCTION AND CONSUMPTION OF PAPER.**—The following statistics of paper-making are given on the authority of Rudel, of Vienna, Austria: It appears that there are 3,960 paper-manufacturers in

the world, employing 80,000 men and 180,000 women, besides the 100,000 employed in the rag-trade; 1,809,000,000 pounds of paper are produced annually. One-half is used in printing, a sixth for writing, and the remainder for packing and for other purposes. The United States averages 17 pounds per head; an Englishman consumes  $11\frac{1}{2}$  pounds; a German, 8 pounds; a Frenchman, 7 pounds; an Italian,  $3\frac{1}{2}$  pounds; a Spaniard,  $1\frac{1}{2}$  pounds; and a Russian only 1 pound annually, on an average.

**CRANBERRY PRODUCTION.**—Mr. N. R. French, statistician of the New Jersey Cranberry-Growers' Association, estimates the cranberry-crops, and their sources, for the past three years as follows:

	1872.	1873.	1874.
	<i>Bushels.</i>	<i>Bushels.</i>	<i>Bushels.</i>
Cape Cod and adjacent islands.....	20,000	80,000	35,000
Massachusetts and Rhode Island.....	20,000	25,000	70,000
New Jersey .....	100,000	110,000	90,000
Wisconsin, Minnesota, Indiana, and Michigan .....	135,000	60,000	50,000
New York .....			5,000
Total.....	275,000	275,000	250,000

The area under regular cultivation in New Jersey in 1874 is estimated at 4,969 acres, and the capital invested at \$1,662,130. Though there was an increase in acreage over the previous year, the crop was 25 per cent. less. The rot, with the failure of the crop on new bogs, is the assigned cause. The crop on the eastern part of Cape Cod was in some districts a failure and in others very light; but on the adjacent islands, in the remainder of Massachusetts, in Rhode Island, and Long Island, it was good. The western reports show a great reduction.

**FORAGE GRASSES IN TEXAS**—A correspondent in Austin County writes:

I have been in search of an article of green winter forage for horses and cattle, and have made experiments with several grasses. Orchard-grass grows finely on uplands, both in the shade and open fields, so also does red clover. Italian rye-grass makes a fine winter and spring pasture, and is better adapted to the climate than the orchard or perennial rye-grass, but it requires a rich, moist soil. Being a biennial it also requires reseeding, or it will run out. All the above grasses succumb to a severe Texas drought.

I have been more successful with a grass which I suppose to be indigenous to this latitude. It was brought from Louisiana to Texas, during the late war, by the confederate cavalry, and is now spreading over the country from the old camps of those troops. I know it only by the name of "Louisiana grass." It is often disseminated by the droppings of animals. It takes hold slowly, but vigorously. When the seed is sown it makes but little show till the second year, at which time it forms a complete turf, taking the sway over weeds and other grasses. So far as I have observed, horses, cows, and sheep are very fond of grazing on it, and it makes an excellent hay, being about as rich in seed as timothy. It stands the close grazing of sheep equally with our excellent Bermuda-grass. It is not much affected by summer heat and drought, and bears the tramping of stock; yet it easily yields to the plow, and may be exterminated by one season's tillage. Two horses or mules turn it under with ease. It is not a winter grass, though it is but little affected by frost, putting up green in favorable weather all winter. It makes good grazing early in the spring and goes to seed in August. From the progress it is now making it is destined, at no distant day, to take our Texas prairies, and make a stock range equal to, if not better than, what the country had in a state of nature.

For green winter forage in this part of Texas, where there is but little frost, many persons sow wheat, barley, or rye. These are all very good, and keep horses and milch cows in fine plight. But for this purpose the winter oat, or what is here called the "red rust-proof oat," is gaining the preference. I have seen it, planted in October and November, grazed till the 1st of March, when the out-range becomes good, and then

yields from 30 to 40 bushels to the acre. Stock appear to relish it better than other small grain. It ripens and is harvested in this latitude the 1st of June. The grain is of a reddish color, weighing, generally, 32 pounds to the measured bushel, has a bright, stiff straw, seldom falling from wind or storm. It withstands rust almost effectually.

**SUCCESS IN RAISING CORN IN MISSISSIPPI.**—Mr. J. L. Blanks, of Lauderdale County, reports that he raised, the past season, on an acre of poor pine-land, 70 bushels of corn, by actual measurement, and thinks that the yield was diminished one-third in consequence of the drought, which began in the middle of July and continued till after the corn was harvested, which was the last week in September. The land was subsoiled to the depth of about one foot, and thoroughly pulverized. Early in April about 575 bushels of compost (from scrapings of a cow-lot, loose soil under and about his gin-house, and a small quantity of cotton-seed) were distributed and covered in rows 4 feet apart. April 30, these rows were opened, and the corn planted 8 to 10 inches apart, which was subsequently thinned about one-half. June 1, about 200 bushels of heated cotton-seed were sown on the acre and mixed with the surface soil. The corn received frequent and thorough cultivation.

**AGRICULTURE IN SAINT LANDRY, LA.**—A local authority gives the agricultural statistics of this parish, for 1873, as follows: Land cultivated, 42,595 acres; uncultivated, 548,342. The census of 1870 returns 80,452 acres cultivated, and 232,376 uncultivated, showing in the later statistics a falling off in cultivated area of nearly one-half, and an increase of land in the parish of 278,109 acres. The area and yield of the several crops reported are: Corn, 23,433 acres, yield, 162,927 bushels, equal to 67 bushels per acre; cotton, 17,668 acres, yield, 3,315 bales; cane, 1,299 acres, yield, 193 hogsheads of sugar and 343 barrels of molasses; rice, 195 acres, yield, 669 barrels. The products of these several crops in the parish, in 1869, as reported for the census, were: Corn, 368,897 bushels; cotton, 14,305 bales; sugar, 1,988 hogsheads; molasses, 118,110 gallons; rice, 33,375 pounds. The figures show that one or both of these reports must be greatly wanting in accuracy.

**A SUBSTITUTE FOR CREAM IN CHEESE.**—The American Dairy and Commercial Company—president, Henry D. Gardner—hold a patent for making cheese from milk, after the cream is taken from it, by substituting therefor oleo-margarine. The following description of the apparatus, process, and results thus far, is condensed from a report made after personal investigation. The company, of which Henry O. Freeman, inventor of the patented process, is agent, have their factory at McLean, Tompkins County, New York. The building is 326 feet by 32, and two stories high, with a pool in one wing. The oleo-margarine used is described as white, opaque, fine-grained, odorless, and presenting to the taste a pure oily flavor. The milk is skimmed at twenty-four to thirty-six hours. While this is heating in a vat to a temperature of 92°, the oleo-margarine is being melted, and slowly raised in a water bath to a temperature slightly above that of the milk. Over the center of the vat, supported by a simple frame, is placed a tin vessel about 18 inches square, with a finely-punctured bottom. After the annatto has been stirred into the milk, and when that and the melted oil are at a proper temperature, the latter is poured through the tin strainer and quickly spreads over the surface "in a bright golden flood." Sufficient rennet is put in to cause coagulation in eight to ten minutes, and the temperature gradually raised about 2° higher. Between the pouring in of the oil and the coagulation, the mixture is vigorously stirred. The design of this is



to cause the oil (which would otherwise remain on the surface) to mingle with the milk, so that it may be caught and held in the concrete mass by the sudden coagulation. In about twenty minutes after putting in the rennet the cutting of the curd begins. Being cut and worked by hand into pieces about as large as "good-sized dice," it sinks beneath the surface, upon which a coating of the oil appears. This is skimmed off, and used, as at first, in the next manufacturing process. The manufacture of the curd into cheese does not differ from the ordinary mode. In the particular process witnessed, 2,500 pounds of skimmed milk took up 28 pounds of the oleo-margarine.

As to the quality of the cheese, Mr. Willard reports that there were about 3,000 on hand which were examined "very thoroughly," with the following conclusion: "The curing seems to be delayed longer than in full cream cheese; and the greater age given, the more perfect seems to be the incorporation of the oil and the smoother and sweeter the body of the product. The cheese at McLean is above the average of the full cream cheese, which we have inspected this season, in marketable qualities."

The milk is bought according to a plan by which the patrons are credited one pound of cheese for every ten pounds of milk, and are paid for the cheese thus credited "the highest New York quotation, less 2 cents" per pound. The alleged result is, that the dairymen of McLean, by supplying the factory at this rate, have received more for their milk than ever before.

**THE SHORT-HORN CONVENTION.**—The association so named recently held its annual meeting at Springfield, Ill., and elected the following officers: President, J. H. Pickrell, Harristown, Ill.; vice-presidents, William Warfield, Lexington, Ky., David Christie, Paris, Canada; secretary, S. F. Lackridge, Indiana; treasurer, Claude Matthews, Indiana; directors, Lucius Desha, Kentucky; T. C. Jones, Ohio; M. Miles, Michigan; J. R. Page, New York; Stephen White, Ontario; M. H. Cochrane, Quebec; Clinton Babbitt, Wisconsin; A. J. Dunlap, Illinois; George Sprague, Iowa; J. H. Kissenger, Missouri; Harvey Craver, Indiana; Cyrus Jones, California; D. W. Crane, Kansas; M. S. Cockrill, Tennessee.

Committees were raised to collect short-horn statistics, and to urge upon breeders a more general support of the association. It was voted to hold the next meeting, December 2, 1875, at Toronto, Canada.

**RAPACITY OF MIDDLE-MEN.**—A casual correspondent in Lincoln County, Mississippi, reports the following facts: In May, June, and July, good flour could be bought at New Orleans at \$7 to \$8 per barrel, while in his own county middle-men were paid \$12.50 to \$13 cash, or \$16 on time, with good mortgage. Bacon, ribbed sides, sold at New Orleans at 8 to 9 cents; at Brookhaven, Lincoln County, 15 cents cash, or 16 to 17½ on time. Corn-meal quoted at the former place \$4.50, sold at the latter for \$6 cash, and \$7.50 on time.

**ANOTHER RAMIE-MACHINE.**—M. Felix Roland, of Paris, has invented a machine for decorticating the ramie plant, which is spoken of by French journals as very satisfactorily answering the much desired end of separating the fiber from the bark and the bark from the stalk. The difficulty of such separation has been a serious drawback to the culture of this unquestionably very valuable plant. The East Indian government, in view of the great desideratum, offered, several years ago, a prize of \$25,000 for a machine or process that would accomplish the object. The liberal offer has brought out many competitors, and machines of

various descriptions and qualities have been invented, both in Europe and in this country; but no one as yet has obtained the prize. The new machine of M. Roland is described by the Paris Journal of Practical Agriculture as being valuable for its simplicity, its moderate price, and the amount of work it is capable of performing. It is designed not only for the treatment of ramie, but of other textile plants of which the fibers are utilized for the fabrication of tissues. The stems can be worked by it either green or dry, and whether rotted or not. Rotting can thus be dispensed with to great advantage, if the time and expense and unhealthiness of the operation are considered. These repeated efforts are at least important steps in the right direction.

AMERICAN COTTON IN CHINA.—A quantity of upland cotton was sent from this Department a few years ago to the United States chargé d'affaires at Peking, China, at his request, for experimental purposes. The following letter communicates the somewhat singular result of the experiments that were made. It will be observed that the attempt to introduce American cotton into the mountainous district of Shantung is substantially a failure. It is obvious, however, from the statement which is made in regard to the latitude of the district where the experiments were tried, that the climate is too cold and the season too short for the maturity of cotton.

LEGATION OF THE UNITED STATES,  
*Pekin, June 5, 1874.*

DEAR SIR: In August, 1868, I requested the Commissioner to send me a quantity of upland-cotton seed, which he was obliging enough to do, so that the three packages came during the next summer in excellent condition.

I distributed them to various persons in this city, through whom the seeds were sent to different parts of this province south of Peking. One of these was an English missionary at Tien-Tsin, of whom I recently inquired as to the success of the cultivators to whom he had given this cotton-seed. He writes me as follows:

"I have made inquiries respecting the growth of cotton in Shantung from the seed you gave me a few years ago. I am informed that in each case (for it was given to several farmers) the result was the same. It grew into a fine shrub, much higher and larger than the native plant. One root yielded over a hundred pods, three times the size of native pods, but none of them opened, and consequently no cotton-fiber was obtained. The seeds were preserved and planted by one or another every successive year with the same result, so that they are now planted in gardens as a flowering shrub, and are much admired. The farmers say that the climate is too cold, and hence the cotton will not ripen."

The native cotton in this part of China is not over six inches high, and the fiber (as cultivated without much care) is short, almost like wool; perhaps it would develop if more manure was applied. The cloth made from it, by those who rear it generally, is durable. The latitude of that part of Shantung province where the experiment above referred to was tried, is about 38°, and the seed, I suppose, came from Eastern Tennessee. Perhaps more fiber will be developed as the plant becomes acclimatized.

Your obedient servant,

S. WELLS WILLIAMS,  
*United States Chargé d'Affaires.*

FREDERICK WATTS, Esq.,  
*Commissioner of Agriculture, Washington.*

# MARKET-PRICES OF FARM-PRODUCTS.

The following quotations represent, as nearly as practicable, the state of the market at the beginning of each month.

Articles.	November.		December.	
NEW YORK.				
Flour, superfine State.....per barrel..	\$4 00	to \$4 55	\$4 00	to \$4 50
extra State.....do.....	4 70	to 5 65	4 80	to 5 65
superfine western.....do.....	4 00	to 4 55	4 00	to 4 50
extra to choice western.....do.....	4 60	to 8 00	4 75	to 8 00
common to fair southern extras.....do.....	4 80	to 5 75	4 80	to 5 75
good to choice southern extras.....do.....	5 80	to 8 25	5 80	to 8 25
Wheat, No. 1 spring.....per bushel..	1 09	to 1 17	1 18	to 1 25
No. 2 spring.....do.....	1 02	to 1 14	1 11½	to 1 18
winter, red, western.....do.....	1 14	to —	1 18	to 1 23½
winter, amber, western.....do.....	—	to 1 23	1 18	to 1 23½
winter, white, western.....do.....	1 25	to 1 36	1 30	to 1 40
Rye.....do.....	90	to —	94	to 97½
Barley.....do.....	1 45	to —	1 55	to —
Corn.....do.....	77	to 92	87	to 92½
Oats.....do.....	59	to 62	67	to 71
Hay, first quality.....per ton..	16 00	to 20 00	12 00	to 19 00
second quality.....do.....	12 00	to —	—	to 12 00
Beef, mess.....do.....	11 00	to 12 00	9 50	to 10 50
extra mess.....do.....	12 00	to 13 50	11 50	to 12 50
Pork, mess.....per barrel..	19 80	to —	21 00	to —
extra prime.....do.....	17 00	to 18 00	16 25	to 17 25
prime mess.....do.....	20 00	to 21 00	18 50	to 19 75
Lard.....per pound..	14	to —	14½	to —
Butter, western.....do.....	18	to 40	20	to 40
State dairy.....do.....	30	to 42	30	to 42
Cheese, State factory.....do.....	14	to 16¾	14	to 16
western factory.....do.....	12½	to 15¾	12	to 15¾
Cotton, ordinary to good ordinary.....do.....	12½	to 14	12½	to 14½
low middling to good middli'g.....do.....	14½	to 15½	14½	to 15½
Sugar, fair to good refining.....do.....	8¾	to 8¾	8½	to 8¾
prime refining.....do.....	8¼	to —	8½	to —
Tobacco, lugs.....do.....	10½	to 13	8½	to 12
common to medium leaf.....do.....	12¼	to 17	12	to 16
Wool, American XXX and picklock.. do.....	58	to 63	53	to 65
American XX and X.....do.....	47	to 57½	47	to 56
American combing.....do.....	55	to 62	51	to 65
pulled.....do.....	33	to 50	33	to 45
California, spring-clip.....do.....	25	to 36	25	to 36
California, fall-clip.....do.....	25	to 28	18	to 28
Texas.....do.....	18	to 37	18	to 36
PHILADELPHIA.				
Flour, superfine.....per barrel..	4 00	to 4 25	3 87½	to 4 00
Pennsylvania extra.....do.....	5 50	to 5 75	4 37½	to 4 75
Pennsylvania family and fancy.....do.....	6 00	to —	5 37½	to 6 00
western extra.....do.....	4 25	to 4 75	4 37½	to 4 75
western family.....do.....	5 00	to 7 75	5 25	to 6 25
Wheat, winter, red.....per bushel..	1 10	to 1 20	1 18	to 1 22
winter, amber.....do.....	1 20	to 1 25	1 25	to 1 28
winter, white.....do.....	—	to —	1 30	to 1 35
spring.....do.....	—	to —	—	to —
Rye.....do.....	1 07	to —	97	to 1 00
Barley.....do.....	1 20	to 1 50	1 30	to 1 60
Corn.....do.....	70	to 88	80	to 95
Oats.....do.....	55	to 62	62	to 67



## Market-prices of farm-products—Continued.

Articles.	November.	December.
PHILADELPHIA—Continued.		
Hay, prime, baled.....per ton.....	\$20 00 to \$22 00	\$20 00 to \$22 00
common to fair shipping.....do.....	19 00 to 20 00	19 00 to 20 00
Beef, western mess.....per barrel.....	8 00 to 10 00	8 00 to 10 00
extra mess.....do.....	9 00 to 12 00	9 00 to 12 00
Warthman's city family.....do.....	17 00 to	17 00 to
Pork, mess.....do.....	20 50 to 21 00	21 00 to 22 00
prime mess.....do.....	19 00 to 19 50	20 00 to
prime.....do.....	19 00 to	19 50 to
Lard.....per pound.....	13 $\frac{3}{4}$ to 14 $\frac{1}{2}$	14 to 18 $\frac{1}{2}$
Butter, choice Middle State.....do.....	38 to 40	30 to 45
choice western.....do.....	30 to 32	20 to 32
Cheese, New York factory.....do.....	16 to 16 $\frac{1}{2}$	16 to 16 $\frac{1}{2}$
Ohio factory.....do.....	15 $\frac{1}{2}$ to 16	15 $\frac{1}{2}$ to 16
Sugar, fair to good refining.....do.....	8 $\frac{3}{4}$ to 8 $\frac{3}{4}$	8 $\frac{1}{2}$ to 8 $\frac{3}{4}$
Cotton, ordinary to good ordinary.....do.....	12 $\frac{3}{4}$ to 14	12 $\frac{3}{4}$ to 14 $\frac{1}{2}$
low middling to good middling.....do.....	14 $\frac{1}{4}$ to 15 $\frac{1}{2}$	14 $\frac{1}{4}$ to 15 $\frac{3}{4}$
Wool, Ohio fleece X and XX.....do.....	— to	53 $\frac{1}{2}$ to 55
Ohio combing.....do.....	61 to 66	62 to
pulled.....do.....	32 to 46	31 to 46 $\frac{1}{2}$
unwashed, cloth'g and comb'g.....do.....	25 $\frac{1}{2}$ to	27 $\frac{1}{2}$ to 42 $\frac{1}{2}$
BALTIMORE.		
Flour, superfine.....per barrel.....	4 12 $\frac{1}{2}$ to 4 37 $\frac{1}{2}$	4 00 to 4 50
extra.....do.....	4 75 to 5 50	4 75 to 5 50
family and fancy.....do.....	5 45 to 7 00	5 50 to 8 50
Wheat, white.....per bushel.....	1 15 to 1 30	1 20 to 1 40
amber.....do.....	1 20 to 1 30	1 25 to 1 38
red.....do.....	1 15 to 1 23	1 22 to 1 33
Rye.....do.....	1 00 to 1 05	1 00 to 1 05
Corn, white, southern.....do.....	80 to 95	75 to 82
yellow, southern.....do.....	80 to 83	75 to 82
Oats, southern.....do.....	58 to 60	62 to 65
western.....do.....	55 to 60	62 to 64
Hay, Pennsylvania.....per ton.....	17 00 to 20 00	17 00 to 19 00
Maryland.....do.....	17 00 to 21 00	17 00 to 21 00
Pork, mess.....per barrel.....	21 50 to	21 00 to
Lard.....per pound.....	15 to 15 $\frac{1}{2}$	15 $\frac{1}{2}$ to 17
Butter, western.....do.....	22 to 36	18 to 36
eastern.....do.....	33 to 40	26 to 40
Cheese, eastern.....do.....	16 to 16 $\frac{3}{4}$	15 $\frac{1}{2}$ to 16 $\frac{1}{2}$
western.....do.....	14 $\frac{1}{2}$ to 15 $\frac{3}{4}$	15 to 16
Sugar, fair to good refining.....do.....	8 $\frac{1}{2}$ to 8 $\frac{3}{4}$	8 $\frac{1}{2}$ to 8 $\frac{3}{4}$
Tobacco, lugs.....do.....	6 to 11 $\frac{1}{2}$	6 to 11 $\frac{1}{2}$
common to medium leaf.....do.....	8 $\frac{1}{2}$ to 14 $\frac{1}{2}$	8 $\frac{1}{2}$ to 13
Cotton, ordinary to good ordinary.....do.....	— to 13 $\frac{3}{4}$	— to 14
low middling to middling.....do.....	13 $\frac{1}{2}$ to 14	14 $\frac{1}{2}$ to 14 $\frac{1}{2}$
CINCINNATI.		
Flour, superfine.....per barrel.....	3 75 to 4 00	3 75 to 4 00
extra.....do.....	4 65 to 4 85	4 75 to 4 90
family and fancy.....do.....	4 85 to 6 00	5 00 to 6 00
Wheat, red winter.....per bushel.....	1 00 to 1 06	1 03 to 1 10
hill winter.....do.....	1 08 to 1 12	1 07 to 1 12
white.....do.....	1 05 to 1 16	1 05 to 1 20
Rye.....do.....	92 to 95	1 05 to 1 07
Barley.....do.....	1 05 to 1 40	1 20 to 1 55
Corn.....do.....	60 to 80	70 to 73
Oats.....do.....	52 to 55	56 to 60

## Market-prices of farm-products—Continued.

Articles.	November.	December.
CINCINNATI—Continued.		
Hay, baled, No. 1 .....	\$21 00 to \$23 00	\$20 00 to \$23 00
lower grades .....	15 00 to 19 00	15 00 to 19 00
Pork, mess. .... per barrel ..	— to —	20 75 to 21 00
Lard .....	11 to 12 $\frac{3}{4}$	13 to 14 $\frac{1}{4}$
Butter, choice. .... do. ....	— to 30	27 to 33
prime .....	25 to 23	24 to 26
Cheese, prime factory .....	15 $\frac{1}{2}$ to 16	15 to 15 $\frac{1}{2}$
Sugar, New Orleans, fair to good ..	— to —	8 $\frac{1}{4}$ to 8 $\frac{3}{4}$
prime to choice. .... do. ....	— to —	9 to 9 $\frac{1}{2}$
Tobacco, lugs .....	12 to 25	12 to 15
leaf .....	15 to 37 $\frac{1}{2}$	15 to 37 $\frac{1}{2}$
Cotton, ordinary to good ordinary ..	11 $\frac{1}{4}$ to 13	12 to 13 $\frac{3}{4}$
low middl'g to good middl'g. ....	13 $\frac{1}{4}$ to 14 $\frac{1}{4}$	13 $\frac{1}{4}$ to 14 $\frac{1}{4}$
Wool, fleece, common to fine. ....	43 to 47	43 to 47
tub-washed .....	50 to 52	48 to 50
unwashed, clothing. ....	32 to 34	32 to 33
unwashed, combing. ....	35 to 39	35 to 38
pulled .....	37 to 38	35 to 38
CHICAGO.		
Flour, white winter .....	5 25 to 6 25	— to —
red winter. .... do. ....	— to —	— to —
spring, extras .....	4 25 to 5 00	4 40 to 4 75
spring, superfines. ....	3 00 to 4 00	3 12 $\frac{1}{2}$ to 3 65
Wheat, No. 1 spring .....	88 to —	94 to —
No. 2 spring .....	83 to 83 $\frac{3}{8}$	92 $\frac{1}{4}$ to —
No. 3 spring .....	79 to —	85 to —
Corn, No. 2 .....	70 to 71 $\frac{5}{8}$	74 to 77
Oats, No. 2 .....	40 $\frac{1}{2}$ to 47 $\frac{1}{4}$	53 $\frac{1}{2}$ to 54
Rye, No. 2 .....	82 to 83	81 to —
Barley, No. 2 .....	1 24 to 1 32	1 21 to 1 25
Hay, timothy .....	13 00 to 16 50	13 00 to 18 00
prairie .....	8 50 to 13 00	9 00 to 13 50
Beef, mess. .... per barrel ..	8 50 to —	8 25 to —
extra mess .....	9 50 to —	9 25 to —
Pork, mess. .... do. ....	18 00 to 19 50	20 25 to 20 30
prime mess .....	— to —	17 75 to 18 00
extra prime .....	— to —	15 00 to 15 50
Lard .....	12 $\frac{3}{8}$ to 12 $\frac{5}{8}$	— to 13 $\frac{1}{2}$
Butter, choice to fancy .....	30 to 35	33 to 38
medium to good .....	24 to 28	25 to 28
Cheese, New York factory .....	15 to 16	15 to 15 $\frac{1}{2}$
Ohio and western factory .....	14 to 15	14 to 14 $\frac{1}{2}$
Sugar, New Orleans, prime to choice ..	9 $\frac{1}{4}$ to 9 $\frac{3}{4}$	— to 9 $\frac{1}{4}$
common to fair. .... do. ....	8 $\frac{1}{2}$ to 9 $\frac{1}{4}$	8 $\frac{1}{4}$ to —
Wool, tub-washed .....	45 to 57	45 to 57
fleece-washed .....	40 to 50	40 to 47
unwashed .....	27 to 35	27 to 34
pulled .....	— to —	— to —
SAINT LOUIS.		
Flour, spring. .... per barrel ..	3 00 to 4 50	3 00 to 4 50
winter .....	3 00 to 8 00	3 00 to 7 00
Wheat, red winter. .... per bushel ..	90 to 1 12	90 to 1 12
white winter .....	1 00 to 1 10	95 to 1 08
spring .....	80 to 85	88 to 92
Corn .....	70 to 75	67 to 82
Rye .....	83 to 86	90 to 97
Barley .....	95 to 1 20	1 10 to 1 42
Hay, choice timothy .....	19 00 to 24 00	19 00 to 22 00
prairie .....	12 00 to 15 00	12 00 to 16 00

## Market-prices of farm-products—Continued.

Articles.	November.	December.
SAINT LOUIS—Continued.		
Beef, mess .....	\$14 00 to \$15 00	\$14 00 to \$15 00
Pork, mess .....	21 50 to 22 00	19 70 to 20 50
Lard .....	12 to 15	12 to 14
Butter, prime to choice .....	28 to 33	32 to 33
lower grades .....	22 to 26	28 to 33
Cheese, factory .....	13 to 13½	13 to 13½
Cotton, ordinary to good ordinary .....	11½ to 13¼	12 to 13½
low middling to good middl'g. do.....	14 to 15	13¾ to 14½
Wool, tub-washed .....	50 to 53	50 to 54
fleece-washed .....	32 to 45	32 to 52
unwashed combing .....	27 to 33	28 to 36
NEW ORLEANS.		
Flour, superfine .....	4 25 to —	4 25 to 4 37½
extra .....	4 50 to 5 75	4 50 to 5 25
choice to fancy .....	5 85 to 7 00	5 37½ to 6 50
Corn, white .....	1 05 to —	1 07½ to 1 03
yellow .....	1 00 to 1 02½	1 05 to —
Oats .....	62 to 63	70 to 72
Hay, choice .....	25 00 to 26 50	27 00 to 29 00
prime .....	27 00 to 28 00	26 50 to —
Beef, Texas .....	to —	to —
Fulton Market .....	11 00 to 11 50	11 25 to 11 50
western .....	to —	18 00 to —
Pork, mess .....	22 00 to 22 50	21 00 to 23 00
Lard .....	14½ to 15½	15¾ to 16
Butter, choice western .....	30 to 32	28 to 30
northern .....	40 to —	42 to 43
Cheese, choice western factory .....	15 to 15½	15 to 15½
New York cream .....	17½ to 18	16 to 18
Sugar, fair to fully fair .....	8½ to 9¾	6½ to 7½
prime to strictly prime .....	8¾ to 9	7½ to 8½
clarified, white and yellow .....	10 to 10½	8½ to 10½
Cotton, ordinary to good ordinary .....	13 to 13¾	to 13¾
low middling to good middling. do.....	13¾ to 14½	14½ to 15
Tobacco, lugs .....	9 to 11½	9 to 11½
low leaf to medium leaf .....	12 to 14	12 to 14
Wool, lake .....	to —	25 to —
SAN FRANCISCO.		
Flour, superfine .....	3 90 to 4 25	4 00 to 4 25
extra .....	4 62½ to 4 87½	4 50 to 4 75
family and fancy .....	5 00 to 5 12½	5 00 to 5 12½
Wheat, California .....	1 35 to 1 55	1 35 to 1 55
Oregon .....	1 40 to 1 50	1 40 to 1 55
Barley .....	1 05 to 1 35	1 15 to 1 45
Oats .....	1 25 to 1 65	1 25 to 1 65
Corn, white .....	1 25 to 1 30	1 35 to 1 42½
yellow .....	1 25 to 1 30	1 35 to 1 42½
Hay, State .....	9 00 to 15 00	17 00 to —
Beef .....	9 00 to —	9 00 to 10 00
Pork, mess .....	22 00 to 24 00	23 00 to 24 00
prime mess .....	17 50 to 18 50	18 00 to 21 00
Lard .....	15 to 16	14½ to 16
Butter, overland .....	20 to 25	25 to 40
California .....	25 to 50	25 to 60
Oregon .....	20 to 30	20 to 35
Cheese .....	12½ to 16	12½ to 16
Wool, native .....	14 to 22	12 to 20
California .....	18 to 22	15 to 20
Oregon .....	20 to 22	18 to 20



## LIVE-STOCK MARKETS.

Articles.	November.		December.	
NEW YORK.				
Cattle, extra beeves .....	per cental..	\$12 30 to \$13 00	\$13 75 to \$14 00	
good to prime .....	do.....	to 12 00	to 13 25	
common to fair .....	do.....	7 25 to	to	
milch-cows .....	per head..	40 00 to 70 00	40 00 to 70 00	
calves .....	do.....	8 50 to 14 00	9 00 to 11 00	
Sheep .....	per cental..	4 50 to 7 02	4 00 to 7 50	
Swine .....	do.....	5 00 to 6 50	6 75 to 7 00	
PHILADELPHIA.				
Cattle, beeves .....	per cental..	3 00 to 7 12 <sup>1</sup> / <sub>2</sub>	4 00 to 9 25	
Sheep .....	do.....	2 50 to 5 50	to	
Swine, corn-fed .....	do.....	9 50 to 10 00	to	
BALTIMORE.				
Cattle, best beeves .....	per cental..	4 75 to 6 25	5 37 to 6 75	
first quality .....	do.....	3 75 to 4 75	4 37 to 5 37	
medium .....	do.....	3 00 to 3 75	3 25 to 4 37	
ordinary .....	do.....	2 25 to 3 00	3 00 to 3 25	
general average of the market .....	do.....	3 87	4 25	
most of the sales .....	do.....	3 62 to 4 62	3 87 to 5 00	
milch-cows .....	per head..	35 00 to 50 00	35 00 to 50 00	
Sheep .....	per cental..	4 00 to 5 00	4 00 to 5 50	
Swine .....	do.....	8 00 to 8 75	8 75 to 9 75	
CINCINNATI.				
Cattle, common to good medium ..	per cental..	2 00 to 3 50	2 50 to 4 50	
good to choice .....	do.....	3 75 to 5 00	4 75 to 5 50	
milch-cows .....	per head..	30 00 to 50 00	30 00 to 55 00	
veal-calves .....	per cental..	3 50 to 6 00	6 50 to 7 50	
Sheep, common to good .....	do.....	3 00 to 4 00	3 25 to	
extra .....	do.....	to	to 5 00	
Swine, common to medium .....	do.....	5 00 to 5 85	to	
good to extra .....	do.....	5 90 to 6 10	6 50 to 7 50	
CHICAGO.				
Cattle, extra-graded steers, 1,350				
to 1,550 pounds .....	per cental..	Nominal.....	6 25 to 6 50	
choice beeves, 3 to 5 years				
old, 1,300 to 1,450 pounds .....	do.....	5 25 to 5 75	5 50 to 6 00	
good beeves, 1,150 to 1,300				
pounds .....	do.....	4 00 to 4 75	4 50 to 5 00	
medium grades, 1,100 to				
1,250 pounds .....	do.....	3 25 to 3 75	4 00 to 4 50	
lower grade, natives .....	do.....	1 50 to 3 25	1 75 to 4 25	
Texans, choice corn-fed .....	do.....	3 75 to 4 50	4 25 to 4 50	
Texans, north-wintered .....	do.....	1 75 to 3 50	2 25 to 4 25	
Texans, through droves .....	do.....	1 50 to 3 25	1 75 to 3 75	
Sheep, poor to medium .....	do.....	2 50 to 3 50	2 50 to 3 50	
good to choice .....	do.....	3 75 to 4 50	3 75 to 4 50	
Swine, inferior to medium .....	do.....	5 25 to 6 00	6 50 to	
good to extra .....	do.....	6 05 to 6 40	to 7 50	
SAINT LOUIS.				
Cattle, choice native steers, 1,300				
to 1,600 pounds .....	per cental..	5 00 to 5 50	4 75 to 5 75	
prime native steers, 1,200				
to 1,400 pounds .....	do.....	4 75 to	to 4 50	

*Live-stock markets—Continued.*

Articles.	November.		December.	
SAINT LOUIS—Continued.				
Cattle, fair butchers' steers, 1,000 to 1,200 pounds.....per cental..	\$3 00	to \$4 00	\$3 25	to ———
inferior native grades .....do.....	1 00	to 3 50	2 00	to \$3 50
Texans and Cherokees, good and fat .....do.....	2 00	to 3 50	2 75	to 3 50
Texans, through droves.....do.....	———	to ———	1 75	to 2 50
Sheep, common to good.....do.....	2 50	to 4 00	2 25	to 3 00
choice and extra .....do.....	4 25	to 5 00	3 00	to 4 75
Swine, inferior to good .....do.....	3 25	to 5 25	5 50	to 6 50
good to extra .....do.....	5 25	to 6 25	6 50	to 7 50
Horses, plugs.....per head.....	40 00	to 75 00	40 00	to 75 00
plain .....do.....	80 00	to 110 00	80 00	to 110 00
street-car .....do.....	75 00	to 125 00	75 00	to 125 00
good drivers .....do.....	100 00	to 150 00	100 00	to 150 00
heavy draught .....do.....	130 00	to 170 00	130 00	to 170 00
extra .....do.....	175 00	to 180 00	175 00	to 180 00
Mules, 14 to 15 hands high.....do.....	75 00	to 120 00	75 00	to 120 00
15 to 16 hands high .....do.....	120 00	to 180 00	120 00	to 180 00
extra .....do.....	175 00	to 200 00	175 00	to 200 00
NEW ORLEANS.				
Cattle, Texas beeves, choice.....per head..	———	to 40 00	———	to 40 00
Texas beeves, first quality .....do.....	30 00	to 35 00	30 00	to 35 00
Texans, second quality .....do.....	20 00	to 25 00	20 00	to 25 00
western beeves .....per cental..	———	to ———	———	to ———
milch-cows .....per head.....	40 00	to 100 00	35 00	to 100 00
calves .....do.....	7 00	to 9 00	7 00	to 9 00
Sheep, first quality.....do.....	4 00	to 5 00	4 00	to 5 00
second quality.....do.....	3 00	to 4 00	3 00	to 4 00
Swine.....per cental..	5 00	to 9 00	5 00	to 9 00

## FOREIGN MARKETS.

WHEAT.—The decided winter weather about the middle of November, in England, was favorable to the growing wheat, by checking its luxuriance. Farmers had become uneasy at the unusual growth of the plant, fearing that it would work ultimate injury to the grain. The slight tendency to upward prices had realized no important results. The Paris market, however, had shown an improvement of 1 shilling per quarter in wheat and 1 shilling 4 pence per sack in flour, but the French provincial markets did not respond to this upward movement. The advances were but slight and isolated. Odessa wheat was in rapid shipment, both to France and England. Growers have exhibited great disappointment at the prices realized, and have reduced their offerings. Holders are also withdrawing from market in Belgium, Holland, and most parts of Germany. Hungary is exporting very scantily. Odessa, with increased supplies by water, is still shipping largely at full rates, although advices from western Europe do not seem to warrant such buoyancy of prices. The sales of English wheat during the second week of November in England amounted to 54,695 quarters, at 44s. 5d. per quarter, against 58,180 quarters, at 60s. 9d., in the corresponding week of 1873. The London averages were 45s. 5d. on 2,073 quarters. The imports into the United Kingdom during the first

week in November were 1,106,111 cwts. The second week in Mark Lane opened on moderate supplies of English wheat, with good arrivals of foreign, two-thirds of which were from Russia. Sales were slow, but holders, by perseverance, obtained full rates. Foreign white wheats held their own, but foreign reds were dull. Essex and Kent brought 45s. to 50s. per quarter; ditto, red, 42s. to 46s.; Norfolk, Lincolnshire, and Yorkshire, red, 42s. to 46s.; Dantzic, mixed, 50s. to 59s.; Königsberg, 47s. to 58s.; Rostock, 47s. to 50s.; Silesian, red, 46s. to 51s.; Pomeranian, Mecklenberg, and Uckermark, red, 45s. to 49s.; Ghirka, 41s. to 43s.; Russian, hard, 40s. to 44s.; Saxonska, 45s. to 47s.; Danish and Holstein, red, 40s. to 51s.; American, 42s. to 46s.; Chilian, white, 51s.; Californian, 52s.; Australian, 52s. to 55s. In Liverpool Canadian white brought 9s. 5d. to 10s. per cental; American, white, 9s. 6d. to 10s. 2d.; ditto, red winter, 9s. 2d. to 9s. 6d.; No. 1, spring, 8s. 6d. to 9s. 6d.; No. 2, spring, 8s. 3d. to 9s.; Californian, 9s. 8d. to 10s. 8d.; Oregon, 10s. 6d. to 10s. 8d.; Chilian, 9s. 2d. to 9s. 4d.; Saidi, 8s. 3d. to 8s. 6d. In Paris holders demanded 44s. to 48s. for white, and 42s. 6d. to 46s. for red, the market closing very firm on fine qualities. The French country markets showed a buoyant tendency. At Rotterdam the tendency was somewhat downward. Algerian granaries were full of soft wheat, and holders were disposed to abate their expectations.

**FLOUR.**—The imports of flour into the United Kingdom during the first week in November amounted to 99,781 cwts. English flour was in good supply in Mark Lane at the opening of the second week, but foreign supplies were by no means full. In Mark Lane the best town-households were quoted at 36s. to 43s. per 280 pounds; best country-households, 31s. to 33s.; Norfolk and Suffolk, 29s. to 30s.; American, per barrel, 23s. to 25s. In Liverpool English and Irish superfines brought 33s. to 36s. per 280 pounds; extras, 38s. to 42s.; French, 37s. to 47s.; Trieste, 48s. to 60s.; Spanish, 41s. 3d. to 43s.; Chilian, 33s. 6d. to 36s. 6d.; Californian, 38s. to 40s.; American, Western and extra State, 23s. to 25s. per barrel; Baltimore and Philadelphia, 22s. 6d. to 26s.; Ohio and extra, 23s. to 26s.; Canadian and extra, 22s. to 27s. The Paris flour-market tended upward, prices for consumption ranging from 33s. 4d. to 35s. 11d. per 280 pounds.

**MAIZE.**—In Mark Lane small supplies kept prices too high for an active trade. White American brought 38s. to 40s. per quarter; ditto yellow, 34s. to 37s. In Liverpool American, new and old, ranged from 36s. to 38s. 6d. per 480 pounds; Galatz, 37s. 9d. to 38s. Some attention has of late been directed by English farmers to the importation of this grain for stock-feeding.



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